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EQUIPMENT

JULY 20

PROGRESS
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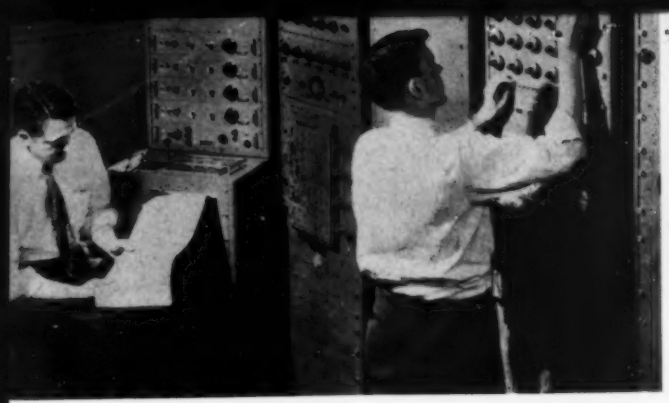

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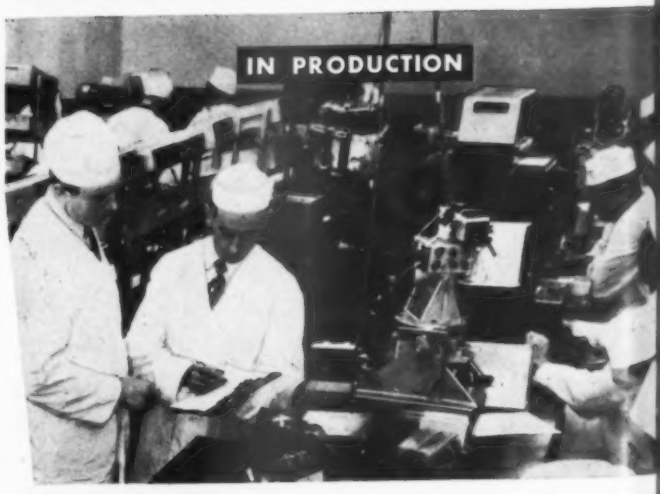

As the new fiscal year gets underway:

Industry will be watching new Air Force line-up closely. Gen. Nathan Twining, AF Chief of Staff, can be expected to speak his mind, even when his views differ from those of Defense Secretary Wilson and Adm. Arthur Radford, chairman of the Joint Chiefs of Staff.

Twining already has backed 143 AF wings. He's advocated strategic air power. Since Wilson took over, the Navy, without fanfare, got the go-ahead on its third super-carrier. This is one reason why Gen. Hoyt S. Vandenberg fought so hard against AF budget cuts. He saw the carrier approval as the start of a trend. Twining can be expected to buck the trend just as hard. JCS meetings promise to be interesting.

Eisenhower's Defense Department reorganization, giving more power to the Secretary and to the JCS chairman, will be watched to see which way it goes: toward centralization or decentralization of power. Advocates claim the purpose is decentralization, with more responsibility to be placed on AF, Army and Navy Secretaries. Opponents see it as one in a series of moves toward centralization of power. How Wilson and Radford work may prove who is right.

New Defense Materials System will go into effect, now that Defense Production Act has been extended. It's a modified controlled materials plan, but should be adequate to assure that no bottlenecks develop in steel, copper, and aluminum supplies for defense production.

Defense Department is pushing the Senate to restore House cut in Defense budget for flying by "armchair pilots." Many of these pilots (AF and Navy insist they include some of their best) draw desk duty as part of training for higher posts in wings and squadrons. They've been keeping up proficiency by flying 100 hours annually. House banned funds for operation and maintenance of planes for proficiency flying in excess of 48 hours a year. Pilots will still get flight pay by flying that number of hours.

This cut wasn't part of Wilson economy move. It originated in the House. Both AF and Navy think it's dangerous—48 hours isn't enough to keep pilots (some 25,000 are affected) proficient in night and instrument flying in today's complex aircraft.

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Congress plans to quit at the end of July. As far as aviation is concerned:

Administration's push to extend excess profits tax will succeed. This hits manufacturers, not airlines—most of whom weren't affected by the tax last year.

Legislation providing government assistant for jet prototypes doesn't stand a chance. Airlines and government oppose it, manufacturers didn't even appear at hearings.

There's support for development of a local service prototype, but little chance of action.

Reorganization plan transferring subsidy payments from Post Office to Civil Aeronautics Board will probably be approved.

Repeal of 15% transportation tax is dead.

Its a toss-up whether there'll be action on increasing air mail postage rates to seven cents. There's considerable opposition in the House. However, Republican leaders predicted after a White House conference that the measure will pass.

The Washington View

Training Camp for '56?

Republican Senate leaders, preparing for the impending floor fight over the Administration's Air Force budget, are also set to test the mettle of former Air Secretary Stuart Symington, now the junior Senator from Missouri, who is envisioned as a possible Democratic candidate for president in 1956. Although Symington denies the latter implication, he is acting the part and has been the leader for his party in its first strong attacks on the Eisenhower policies.

He made his maiden Senate floor speeches against the defense cuts, particularly for the Air Force, and in doing so sharply attacked Secretary of Defense Wilson and criticized Rep. John Taber (R., N. Y.), chairman of the House Appropriations Committee. Wilson, Symington said, was nothing but a "fiscal manipulator" and Tabor, he charged with making "bitter and inaccurate personal attacks" on Gen. Hoyt S. Vandenberg, retired USAF Chief of Staff.

Rep. Taber, a 30-year veteran of Congression battles, took Symington's diatribe in stride, but he charged the freshman senator violated the rules of the House and Senate. He was not surprised, Taber said, at Senator Symington's speech—"It's the way the gentleman has always talked."

In neither case, however, was Symington rebutted on the floor at the time. All of which leaves to be seen what Symington can do in a "knock-down, drag-out" debate, which has certainly been shaping up.

The Broadened Base

Differences of opinion between partisan politicos, which are usually volubly expressed, are the rule on Capitol Hill, whereas open disagreement between two administration leaders within the executive branch is less seldom displayed. Last week a case of the latter broke out as Defense Secretary Charles Wilson and Defense Mobilization Director Arthur Flemming met head-on in a row over the industrial base-broadening policy.

Flemming, for the moment, seems to have won the first round. Backed up by the Cabinet, he beat down Wilson's efforts to abandon the Truman Administration's policy of a broad industrial base for defense mobilization. The Cabinet decision probably was not unanimous. Wilson is a member, of course, and had previously indicated strongly that he preferred to "contract" the industrial base (elimination of second source producers) for military production. Flemming's program for the newly reconstituted ODM, however, generally reaffirms the original Truman broad mobilization base policy.

Mission Accomplished

Senate probe of military plane procurement, spearheaded by Sen. Styles Bridges (R., N. H.) as chairman of the investigating subcommittee, apparently is being quietly dropped inasmuch as Kaiser-Frazer Corp., Bridges' principal target, has lost its Air Force contracts.

Parting Shot

It was a deliberate snub to Gen. Hoyt S. Vandenberg when top Defense Department officials as well as the President failed to attend retirement ceremonies last month. The move will undoubtedly cause other members of the military brass to think twice before differing publicly with the new Administration's policies.

Doctor A. Finds a Home

Dr. Beatrice Aitchison, who lost her position as director of the transportation economic division recently when the Commerce Department abolished its Office of Transportation, has caught on with the Post Office Department. She reports to assistant PMG for Transportation, John C. Allen, as director of research and analysis.

While still at Commerce, Dr. Aitchison was responsible for the Office of Transportation's year-long study of "user charges," a study that was subsequently branded by Commerce Undersecretary for Transportation, Robert B. Murray, Jr., as a waste of time. Murray lamented, "I can't visualize how a year could have been better wasted."

"Split-Paper" Decision

Controversial decisions may be in the wind in the Defense Department, as a result of Charlie Wilson's fondness for looking at the facts and making his own decisions. Former Defense Secretary Lovett was in the habit of demanding unanimous decisions from the Joint Chiefs of Staff. When a "split-paper" brought him the view of a minority on the JSC, he would send the paper back. This handling brought concessions, not clear-cut victories. Wilson may well weigh the "split-paper" arguments himself and jump on one bandwagon or another.

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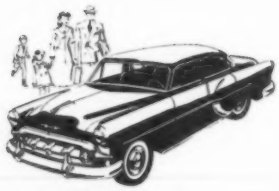

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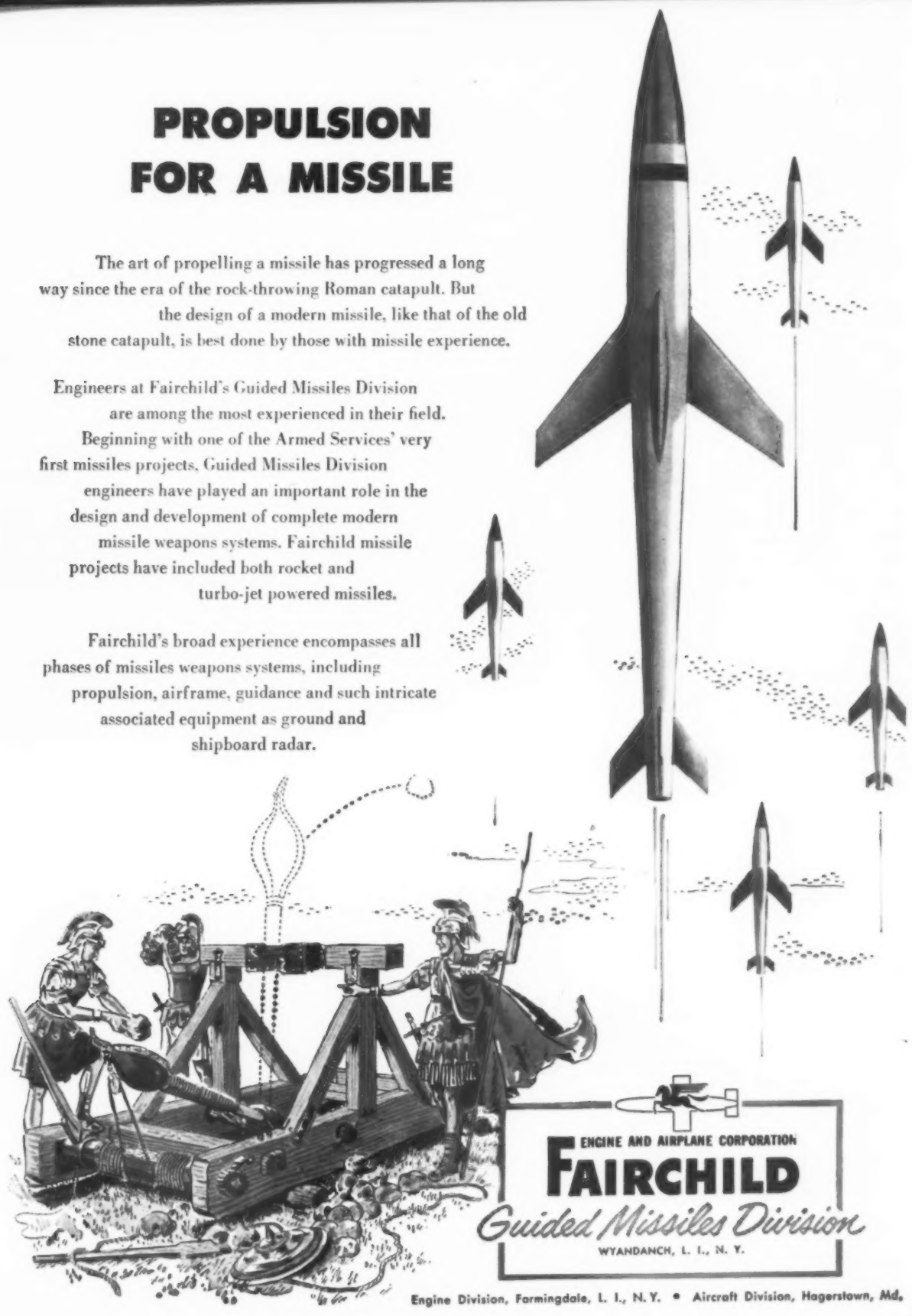

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OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. $200 per year. Managing Editor: Keith Saunders.

American Aviation Directory; twice yearly listing of products, people and organizations. $7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. $11 per year in USA and countries belonging to Pan American Postal Union, including Spain and the Philippines. $12.50 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

American Aviation Traffic News (incorporating Air Tariff Reports): Daily rates and tariff news. $150 per year. Managing Editor: Wallace I. Longstreth.

Where & When

July 29-Aug. 2—Open House, new Newark Airport terminal building.

Aug. 19-21—Western Electronics Show & Convention, Municipal Auditorium, San Francisco. Sponsored by IRE 7th Region and WCEMA.

Aug. 20-23—Air Force Assn., 7th Annual National Convention, Statler Hotel, Washington, D. C.

Aug. 27-29—Institute of Navigation, Annual Meeting, Coast Guard Academy, New London, Conn.

Sept. 5-7—National Aircraft Show & 50th Anniversary of Powered Flight, Dayton, Ohio.

Sept. 21-25—Instrument Society of America, 8th National Instrument Conference & Exhibit, Chicago.

Sept. 22-24—Aircraft Spark Plug & Ignition Conf., Champion Spark Plug Co., Toledo, Ohio.

Sept. 27-29—Int'l Northwest Aviation Council, 17th Annual Conference, Gearhart, Oregon.

Sept. 28-30—National Electronics Conference, 9th Annual Meeting, Hotel Sherman, Chicago.

Sept. 29-Oct. 3—SAE, Aeronautic Meeting & Aircraft Engineering Display, & Aircraft Production, Hotel Statler, Los Angeles.

Sept. 30-Oct. 1—AIEE, Aircraft Electric Equipment Conference, Seattle.

Oct. 1-3—Air Reserve Assn., Annual Meeting. Angebilt Hotel, Orlando, Fla.

Oct. 10-17—5th Annual All-Texas Air Tour. Information from Texas Aeronautics Commission, Walton Bldg., Austin.

Oct. 13-15—Air Transport Association, Annual Engineering & Maintenance Conf., Saxony Hotel, Miami Beach, Fla.

Oct. 14-15—New York State Dept. of Commerce, Annual Airport Development & Operation Conference, Onondaga Hotel, Syracuse.

Oct. 28-30—Southeastern Airport Managers' Association, Annual Convention, Marlin Beach Hotel, Fort Lauderdale, Fla.

Nov. 3-6—National Association of State Aviation Officials, Annual Meeting, Edgewater Gulf Hotel, Edgewater Park, Miss.

Nov. 5-6—SAE, Fuels & Lubricants Meeting, Conrad Hilton Hotel, Chicago.

Nov. 16-17—American Society for Quality Control, Aircraft Quality Control Conf., Biltmore Hotel, Dayton, O.

INTERNATIONAL

Aug. 3-8—Int'l Astronautical Federation, 4th Annual Congress, Zurich, Switzerland.

Aug. 25—ICAO Legal Committee, Rio de Janeiro.

Sept. 7-13—SBAC Aircraft Show & Flying Display, Farnborough, England.

Sept. 7-18—IAS-RAeS, 4th Int'l Conference. London, England.

Oct. 5-10—IATA Annual Assembly, Montreal. Canada.

Oct. 10—International Air Race, England to Christchurch, N. Z.

Nov. 1-22—IATA, Traffic Conferences, Honolulu.

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Editorial

Let's Have Both

THE radar scanning the skies for new signs of action in America's jet program has caught on the screen two rather positive blips moving in side by side with considerable speed from the outer fringes of the scope. These new blips are 180 degrees away from several other moving spots, but all are moving toward dead center. It's going to be an interesting race to see which gets to the airport first.

These two new entries are a leading customer and a leading builder of aircraft who have just recently taken very strong positions favoring the development of the turboprop powered airplane *first* before moving into the turbojet field. Thus C. R. Smith, president of American Airlines, and Joseph T. McNarney, president of Consolidated Vultee Aircraft Corp., have revived in a substantial way the debate which has been rather quiet of late as to which should come first—a jet with or a jet without propellers.

Both the Smith and the Convair proposals are remarkably similar. Both stress the greater efficiency of the turboprop at lower altitudes, the advantages inherent in reversing propellers, the more favorable ground noise level, operating economy, and better handling on and approaching airports. They quickly concede that the turbojet has superior speed, but both believe the turboprop should come first.

Opposed to this view, of course, are the turbojet projects of several top manufacturers. Boeing's new prototype of its slick, sleek and fast turbojet transport is scheduled to fly the latter part of next year. Lockheed has been finalizing its designs after long and costly study. If Douglas has turboprop plans it has kept mighty quiet about them; its mockup and presentations are all based on the turbojet. Engineers of all three companies seem anxious to debate at any time their conviction that the turbojet has much greater efficiency, economy, and performance at lower operating altitudes than the airline operators are willing at this time to believe.

Just where does the U. S. stand, then, in the jet picture? It is now clear that there will be no *direct* government aid for the development of prototypes; whatever is done will come through the military services and the initiative and investments of private companies. It is also clear that we are not to be stampeded by the British into rushing into jets until we have something practical and economical. We'll walk, not run.

But if C. R. Smith and Convair win their point, a great deal more must be done on the more complicated turboprop power plants on which development work has lagged far behind, due largely to the lack of interest by the military services. The turbojet power plant is relatively further ahead; we have at least one top-flight engine in the J57.

In a letter to Senator Tobey, who has been soliciting industry opinion on the jet future for the Interstate and Foreign Commerce Committee of which he is chairman, Mr. Smith made the point that there should be a common specification for a single transport to be used by both airlines and the military. If this were achieved, and if the military services would accelerate the development of turboprop engines, there would be no need for any additional assistance from the federal government for suitable transports for civilian use. In its letter to the Senator, Convair made an even stronger plea for an enlightened airlift policy by the military.

The opinion of this magazine is that the relative merits of turboprop versus turbojet are not nearly so important as is a new airlift policy by the Air Force. The lag in turboprop development has been disgraceful, but General Hoyt Vandenberg, who has opposed spending a dime for any form of transport (despite some recent headline-seeking speeches) is no longer in a position to scuttle forward-looking air-power plans. Not only do we have a new uniformed command that is more experienced and broader in outlook, but we have a civilian command which is strongly air-power minded in more than mere theory or lip-service enthusiasm.

Now that budget problems with Congress are out of the way for this year, we would like to see Air Force Secretary Talbott step forward with a new airlift policy. Whether turboprop or turbojet wins the race isn't as important as getting some sort of jet program under way. Since there's no argument anywhere over the fact that we'll be building and flying both types in the end, we shouldn't let the development of either lag from here on. Let's go after both.

An Air Exchange

The large irregular (nonscheduled) carriers who comprise the membership of the Independent Military Air Transport Association have come up with an idea (new to this country but long established in England) for an air charter exchange or air clearing house which would greatly increase the utilization of the combined fleet of some 72 C-46's, six DC-3's, 41 DC-4's and five DC-6's owned and operated by the group. Such a commercial exchange would supplement IMATA's present military clearing house.

A goodly percentage of this combined fleet is being used in military charter work but many times the airplanes aren't where they're wanted at the moment and dead-head flying runs up costs. Ramsay D. Potts, Jr., IMATA president, proposes a clearing house which would handle both military and commercial charter work. "It would provide a mechanism for handling charter flights and for reducing ferry mileage and dead-head flying to a minimum," he says, "and at the same time provide any prospective charterers the widest possible range of choice in availability of different types of equipment at all times."

The CAB has refused to give permission to IMATA for such a clearing house without a protracted hearing. Although the proposal was made some time ago no date for a prehearing conference has been set, which means that it could drag on for a year and more without action.

The scheduled carriers, almost, it would seem without even studying the merits of the proposal, are all intervening in sharp opposition. Ever since 1946 the scheduled carriers have fought scheduled operations by the irregulars on the grounds that the nonskeds should stick to charter work. It is ironical, but probably inevitable, that when the nonskeds come up with a practical idea to implement their charter work, the scheduled carriers continue to oppose.

We think IMATA's proposal has sufficient merit to warrant a complete airing, and at an early date. We aren't convinced, so far, that the early protests of the scheduled carriers reflect a full understanding of the clearing house or that their fears are justified. The charter potential is a great one in this country and one which the scheduled carriers have never been able to satisfy. We think charters capture more first-riders (and hence more regular airline customers) than any other method. The vast surface shipping enterprise of the world was made possible only because of the Baltic Exchange in London which served as a global clearing house marrying loads with ships. An air exchange here would seem to make sense. At least CAB should not bury the idea without giving it a good look without further delay.

Is the present CAB capable of meeting this challenge? Does it have the proper depth of understanding to plan for the present and future? Has it performed its duties well since 1938? There are increasing doubts on these scores and in subsequent issues we will have much more to say about the subject.

Meeting the Challenge

In a speech delivered June 30 in Calgary, Canada, L. Welch Pogue, former chairman of the Civil Aeronautics Board, pointed out how the private automobile has forged ahead as the dominant factor in intercity passenger transportation since World War II. It has increased from 254 billion to 391 billion intercity passenger miles, a growth of almost 54%.

Meantime during this same period common carrier intercity passenger miles have dropped from 90 billion to 62 billion, a decrease of more than 31%. But although common carriers as a whole have dropped in volume, air carrier passenger miles have continued upwards at a fast pace. Airline penetration of the air and first-class rail market has increased from 22.99% to 55.42%.

This rising ascendency of air transportation in intercity passenger traffic presents to the CAB, as the nation's regulatory agency for air, a tremendous challenge of responsibility. It is a challenge far overshadowing the problems current when the CAB was created in 1938 and the airline network was relatively small.

. . . WAYNE W. PARRISH

Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N.W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

"FISHWIVES' SHRIEKS"

To the Editor:

Your June 8th editorial on the Aviation Writers Association was right to the point. Something like this was long over-due. To my knowledge, you are the first person ever to muster the courage to print the truth about (and for) the AWA.

The crux of the situation is the presence of press agents in the membership. From 1939 through 1946 I tried, first as president and later as secretary, to resolve the problem. It was in 1939 that the first newspaper aviation writer turned to press-agentry. I suggested that he resign his membership in the AWA. He refused. Through the ensuing years every suggestion that the press agents be divorced from the AWA evoked fishwives' shrieks of protest. Even by the time that I gave up the secretaryship in 1947 the embarrassment caused by fish-and-fowl memberships—notably when free transportation from the armed services was solicited—had become too frequent for comfort.

One solution to the problem you pose is setting up separate organizations. I presented an elaborate plan for this that would have given the AWA a simon-pure quality and at the same time permitted the press agents to acquire the dignity they deserve and actually are denied as appendages to the organization.

The plan lost through an arbitrary ruling of the chair. The man in the chair was the vice president of an advertising agency.

Somewhere along the way, since the AWA was organized in 1938, we have become lost in the wilderness. It would take a fair spate of vision, unselfishness, and political statesmanship to effect a rescue before the canteens run dry of water or a reasonable substitute therefor.

DEVON FRANCIS

Popular Science Monthly
353 Fourth Avenue
New York 10, N. Y.

(Devon Francis was founder and president for the first four successive terms of AWA.—Ed.)

•

To the Editor:

AWA has an important role to play in aviation and anything which discredits it as an organization impairs its effectiveness.

I agree with your statement that AWA should "return swiftly to a genuine working group" of writers and editors. Such a step would restore its prestige and strengthen its position in the aircraft industry. A separation of bona fide aviation editorial people and PR personnel need have no effect on the smooth working relationship between the two groups.

Although I have been writing aviation more than 20 years, I have not joined AWA for two reasons: I am not a joiner; I dislike organizations which are neither fish nor fowl.

May I suggest that all non-writers or editors now in AWA join me as active members of Ken Ellington's wonderfully sensible group, the Aviation Readers' Association.

FRANKLIN D. WALKER

Lowes Associates
New York, N. Y.

•

To the Editor:

Having just served (through a selection by Dallas-Fort Worth industry representatives) as chairman of the 1953 AWA Convention, I was especially startled and disappointed by the "Sandbagging" editorial in your June 8 issue. The consensus seemed to be that, from a purely copy-making standpoint, this was the most productive AWA meeting in history.

In analyzing the list of registrants, I find that a very large percentage of them were members of the working press, with most of the remainder being representatives of the military or of companies without whose news-gathering efforts and financial contributions this convention would have been impossible. Having worked in my life both

(Continued on page 77)

Industry Spotlight

Next step for Lockheed Marietta, Lockheed's fast growing Georgia division, is preliminary design for a brand new airplane to be entered in a USAF competition, according to Lockheed vice-president D. J. Haughton, manager of the division. Haughton claims Marietta will design, build the prototypes and, if everything goes well, produce the finished products.

• •

The revamped nose on the Lockheed F-94C Starfire, which had remained unexplained despite photos released with the new pointed nose evident, houses 24 rockets to supplement the dozen 2.75 inch rockets mounted in each of the two pods protruding from the wing leading edges. The Starfire is the first production fighter aircraft which doesn't carry guns.

• •

The Boeing Bomarc, the USAF F-99, made its first flight late last month from the Long Range Proving Ground, Cocoa, Florida. No official reports on the flight have been released. The Bomarc is the first of the USAF's pilotless fighters and is powered by a ramjet engine slung under the fuselage. This is augmented by a fuselage buried rocket engine to get the fighter up to ramjet speed.

• •

No work is being done on the partially completed Chase C-123B line at Willow Run pending a USAF decision on where the cut-off point will be. AF officials have set the 71st Kaiser Motors' C-119 as the last one to be delivered, meaning that Fairchild will probably complete the remaining 88 Packets in Kaiser's order for 159.

• •

New type pilot ejection seat has been incorporated in Lockheed's F-94C jet interceptor. The seat, representing the first venture of TECO (Transport Equipment Company) into the ejection seat line, incorporates telescoping guide rails which carry the pilot up 48 inches, well above the cockpit sill. This contrasts with 28 inches in earlier types. TECO design provides much needed additional space for the pilot and observer in the instrument-packed cockpit.

• •

General Motors' auto-aircraft plant near Fairfax AFB, Kansas City, Kans., has assembled its first Republic F-84F swept-wing Thunderstreak and the plane has made its first flight test. The Buick-Oldsmobile-Pontiac F-84F plant is one of three major aircraft facilities in the Kansas City area, the others being Westinghouse (J40 and J46 engines) and Ford (B-47 parts).

• •

Douglas Aircraft Company has developed a tear-drop shaped housing which can be attached to the underwing of its F4D Skyray, A2D Skyshark and A3D twin jet bomber to carry an AiResearch gas turbine compressor to forward areas for starting fighter aircraft. The housing, which looks like a bomb, is 128 inches long and 28 inches in diameter and can be used on other airplanes having certain standard type bomb racks. Use of pneumatic starters on these planes, which this makes possible, saves about 500 pounds per airplane.

INDUSTRY MISCELLANY

Link Aviation is developing a ground trainer version of the Convair F-102 for the USAF . . . Curtiss-Wright has received a USAF contract to build a Boeing **B-52 flight simulator** . . . 335 helicopters **will be knocked out** of the military's rotary wing program by proposed cut-backs . . . Navy aircraft **production "slippage"** since October, 1952 has been 4% and since Korea 18% . . . At end of calendar 1951 20% of navy planes were modern types, by the end of 1952 43% and estimates call for 44.5% by the end of this year, 65% by the end of 1954 and 80% modern types by January, 1956 . . . **Bendix Radio** has orders for 60 of its new RA-18B VHF aircraft receivers, 47 for Delta-C&S and 13 for National . . .

EXECUTIVE AIRCRAFT CONVERSION BY TEMCO

CASE HISTORY: #811-119-1
CUSTOMER: RILEY AVIATION MANUFACTURING
Fort Lauderdale, Florida
SHIP: NAVION N-4366K
(Owned by Harry L. Edwards Drilling Co., Houston, Tex.)

Twin Navion conversion at TEMCO-Greenville included removal of single engine, all interior furnishings, instrument panels and accessories. Reinforcement of center wing section and installation of two 140 h.p. Lycoming engines with all metal, full feathering Hartzell propellers. Fabrication and installation of new instrument panel with throttle, propeller and mixture controls on floor mounted pedestal. Added toe brakes, larger vertical stabilizer, complete new deluxe interior furnishings and numerous other improvements to produce a new multi-engine executive aircraft — the RILEY TWIN NAVION.

TEMCO-Greenville's complete and versatile service for multi-engine executive aircraft is dramatically demonstrated in this Riley Twin Navion conversion. This is the first off the TEMCO production line . . . now converting Navions on a two-per-week schedule for Riley Aviation Manufacturing under a contract calling for a minimum of 100 ships within the first 12 months.

This conversion, as well as complete rehabilitation of Twin Beechcraft; modification and overhaul of DC-3s and Lockheed Lodestars, plus tank sealing with a guarantee, proves TEMCO-Greenville's claim to one of the most comprehensive overhaul-modification services in the nation.

For full details on this case history and information about TEMCO's complete custom rehabilitation service for multi-engine aircraft, write on business letterhead to:

Herrol Bellomy, Gen. Supt., TEMCO Aircraft Corporation, Greenville Overhaul Division, P. O. Box 1056, Greenville, Texas.

TEMCO AIRCRAFT CORPORATION
DALLAS, TEXAS

B.F.Goodrich

Lets pilots breathe easy 8 miles high

THE CANOPY BUBBLES on fast military airplanes had to be safely pressurized at altitudes of 8 miles or higher. But the ordinary inflatable seals between bubble and cockpit couldn't take the effects of high pressures on the inside, low pressures on the outside.

B. F. Goodrich engineers, called in by the customer, studied the problem. A really effective seal, they believed, should stretch very little or not at all. Less stretch would mean lower pressure, less strain. They worked out a seal with a solid base fastened to the rim of the cockpit and a rubberized fabric covering that simply *lifts* when inflated to form the sealing tube. When this tube inflates, it works like blowing up a paper bag—low pressure brings it to its full expansion and doesn't stretch the fabric enough to notice it. Dangerous stretching of tube wall (like blowing up a toy balloon) is eliminated.

The new seal works almost instantly. Even at minus 65° it inflates with less pressure than old-type seals needed at room temperature. There are other advantages. It resists wear and damage better than ordinary seals. It fits complex curves better. It seals and unseals faster. Sliding wear and scuffing are minimized.

The new B. F. Goodrich seal is now used on more than a dozen makes of planes, including these Navy and Air Force jets: McDonnell Banshee, top left; Northrop Scorpion, top right; Chance Vought Cutlass, bottom left; North American Sabre, bottom right. *The B. F. Goodrich Company, Aeronautical Division.*

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American Aviation

VOL. 17, NO. 4

THE NEW JOINT CHIEFS . . .

Radford | Ridgway | Carney | Twining

AND THEIR PROBLEMS: • **Mobilization** • **Stockpiles** • **Missions** • **New Weapons** • **Readiness Levels** • **Strategic Plans** • **Military Forces**

JCS Get Set for National Defense Review

by Robert M. Loebelson

NOW THAT GEN. NATHAN F. TWINING has become Air Force Chief of Staff, and the other members of the new Joint Chiefs of Staffs are awaiting being sworn in on August 16, the new military defense leaders are ready to embark on their long-heralded review of the defense picture. Defense Secretary Charles E. Wilson has promised Congress that their report, which among other things will re-analyze both the old 143-wing goal for the Air Force and Wilson's "interim" 120-wing goal, will be ready in November.

Gen. Matthew B. Ridgway is already back in the U.S. from his NATO post to take over as Army Chief of Staff, and Admirals Robert B. Carney and Arthur W. Radford are set to assume their new jobs as Chief of Naval Operations and JCS Chairman, respectively. Before long the new JCS will hold an informal session (informal because three members will not yet have been sworn in) at the Pentagon to lay the groundwork for their formal discussions.

Secretary Wilson has stated they will consider "all aspects of defense" and their recommendations will form the basis for the fiscal 1955 defense budget. In his outline of the task before Twining, Radford, Ridgway, and Carney, the Defense Secretary indicated they would debate:

- Strategic plans.
- Military forces to implement those plans.
- Missions of the various services.
- New weapons in existence or on the horizon.
- Readiness levels.
- Mobilization reserves, both stockpiles of materiel and capacity to produce.

Actually, the nation's strategic objectives will probably barely be touched on during JCS discussions. The nation's present strategic planning is based on the assumption that the U.S. has only one potential enemy—Russia—and that while there is some danger of a war with the Soviets in the Far East, it is far more probable that any U.S.-Russian war will be resolved in Western Europe.

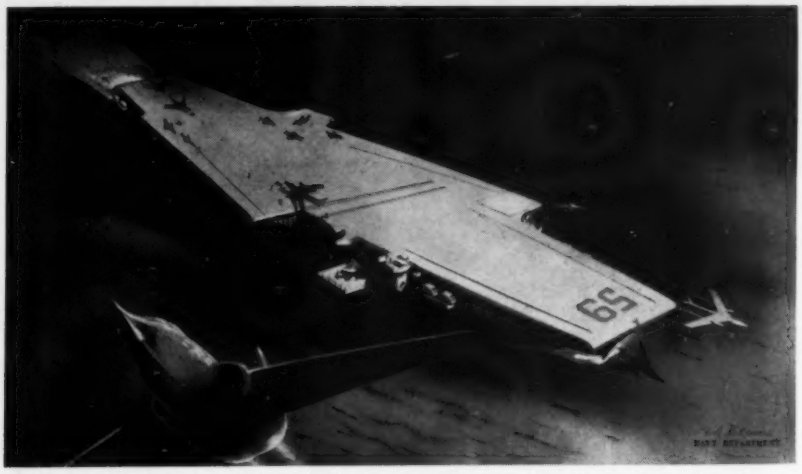
Therefore, the present strategic plan goes, we must build up our Western European allies (NATO) so that they will not only be in a position to hold the line in case the Soviets attack but will also have some aircraft and other industrial production capacity to augment that of the U. S. In addition NATO nations are slated to provide enough manpower and materiel to overcome Russia when coupled with U.S. might.

New JCS members, however, will have to consider the possibility of future "police actions" like the one in Korea rather than an all-out war, and may consequently adjust the strategic plan to face "Koreas" in places like Malaya, French Indo-China, Cambodia, Indonesia, Laos, etc.

In their talks on the forces required to put the strategic plan into effect should D-Day with Russia arrive, the JCS will come up against the same problem which faced the earlier edition of the JCS (Bradley, Collins, Fechteler, Vandenberg) late in 1951 but Radford and his cohorts will not necessarily come up with the same answer as Gen. Omar Bradley's team.

The 1951 JCS-approved programs called for:

- 20 Army divisions, 18 regimental combat teams, 117 anti-aircraft battalions.
- 1,201 Navy ships, 16 Naval carrier air wings.



HOUSE APPROVAL of Navy funds for a third super aircraft carrier again raises the issue of Navy's strategic air power aims, another problem for the JCS.

• 3 Marine divisions, 3 Marine air wings.

• 143 Air Force wings, broken down as 57 for the Strategic Air Command, 40 for the Tactical Air Command, 29 for the Air Defense Command, 17 troop carrier wings.

With the exception of the 143 wings for the USAF, the new civilian leaders in the Pentagon "bought" every segment of the approved goals, principally because the other goals were all but attained (except for modernization).

In reconsidering the number and types of wings for the USAF, especially, Radford, Ridgway, Carney, and Twining will have to assess the following factors, among others:

• The Kelly Report on the state of the U.S. air defenses—a report which shows that the U.S. ability to defend itself from attacking enemy bombers is very poor.

• Improvement, small though it is, in NATO's ability to hold on to some of Western Europe.

• Probability of obtaining air bases in Spain, and possibly even at Gibraltar.

• Possibility of losing air bases in Africa, Saudi Arabia, etc.

• Development of the Army's atomic cannon, which may lessen the necessity for tactical fighter-bombers.

Thus, while the new JCS may reinstate or even increase the old 143-wing goal, make-up of the wings may mean an increase in interceptor wings for air defense at the expense of tactical wings, or possibly a lessening of emphasis on long-range jet bombers in favor of medium bombers.

Other factors which will have a bearing on the recommendations are the numerous new and possibly even "fantastic" weapons already perfected or near that stage, e.g., the atomic cannon, the hydrogen bomb and the various fighter aircraft which may be able to carry it, the advent of accurate air-to-ground guided missiles, air defense missiles like the Army's Nike and the AF's Bomarc, etc.

JCS appraisal of readiness levels (which are directly related to planned force levels) will involve recommendations as to whether to reduce or maintain the present build-up rates, i.e., from 106 wings at present to 110-114 in a year and 120 wings by June, 1955, under the Wilson program, or whether to propose acceleration of the plane-production schedules, even at the expense of some civilian production.

If nothing else, the new JCS will have to set up a priority on which phase of the nation's defense should be built up first. In other words, if it is found that the U.S. cannot afford to have X number of Army divisions, Y number of Naval warships, and Z number of Air Force wings by a target date, Radford and the three heads of the services will have to determine which service would be augmented first, to what level that branch should be built before a second service is built up, etc.

In touching on U.S. mobilization reserves, the new JCS may well pass on a recommendation to the new Assistant Defense Secretary handling the functions of the now-defunct Munitions Board to consider increased stockpiles of certain critical materials (tungsten, nickel, molybdenum) and may even get involved with Secretary Wilson's avowed policy to contract the nation's mobilization base.

The new members of the JCS, of course, may conclude that World War III would be won or lost in the first six months or year of combat and the nation's industrial potential consequently would not be a factor. But it is more likely that the JCS will recommend continuance and creation of selective second sources while others are being eliminated.

And while a recommendation on the implemention of the Vance Report (which calls for the expenditure of several billions to buy standby machine tools and plants) does not appear to be one of the JCS's functions, Wilson's comments on having the JCS make a report on the nation's capacity to produce certainly ties in with the Vance report, and the JCS may well be asked for their comments. The Defense Department's appropriations for fiscal 1954 include $500 million as a down-payment on the Vance program but Wilson has said this money will not be spent until after a complete analysis has been made.

Probably the most touchy of the recommendations Radford and his colleagues will be called on to make will be a review of the roles and missions of the various services. The last time these functions were set down was after a JCS conference at Key West in mid-March of 1948. Obviously, there were some Navy personnel (led by Radford) who did not agree with these functions, for the famed "revolt of the admirals" took place in 1949.

The Key West Agreement assigned to the USAF primary responsibility for strategic air warfare and collateral functions permitting the AF to:

• Interdict enemy sea power through air operations.

• Wage antisubmarine warfare and protect shipping.

• Conduct aerial minelaying operations.

But after another JCS meeting on roles of the various services at Newport, R. I., in August, 1948, Adm. Louis E. Denfeld, then Chief on Naval Operations, amplified this point. "The Air Force recognizes that the Navy will be able to make significant contributions to any strategic air plan. The Air Force will include Naval contributions in all strategic air plans and in the detailed estimates of overall force requirements."

This immediately brings up the Navy's demands for newer and larger aircraft carriers, of which three, including the USS Forrestal, have been approved so far.

The new JCS will probably make few changes in the Key West Agreement since under that pact any JCS member may present unilaterally any issue of disagreement with another service. Thus while Radford may feel that the Navy should have a greater role in strategic warfare by obtaining larger carriers, it would be difficult for him to convince the other JCS members, and especially Airman Twining.

In any event, the new JCS review is not far off and may be beneficial in that the new team, not tied in any way to the Truman Administration, will have submitted recommendations. Their recommendations should be less subject to criticism by the new Administration.

FEATHERED PROP ON TAKE-OFF is a simple maneuver for the XF-88B, McDonnell propeller research aircraft which underwent initial flight tests recently at St. Louis. Regular power package, composed of two Allison J34 turbojets is used for take-off.

XF-88 Used For USAF Prop Tests

A McDonnell XF-88B has been used successfully by the Air Force as a flight test bed for supersonic-type propellers.

Built by the McDonnell Aircraft Corporation, St. Louis, the plane is equipped with an Allison XT38 turboprop engine which powers a single propeller. This supplements its regular power package which includes two Westinghouse J34 turbojet engines. With afterburners, the Westinghouse engines can each develop approximately 4,000 pounds of thrust.

The addition of an Allison engine driving a Curtiss electric propeller enables the XF-88B to attain speeds beyond the normal range of propeller operation, providing valuable source data on high-speed propeller operation.

Propeller gear boxes provide three propeller speeds, which will be tested successively with propeller blades of approximately ten-, seven-, and four-foot diameters in various combinations of two, three, and four blades.

The flights have been accomplished under a development project of the Propeller Laboratory of the Air Research and Development Command's Wright Air Development Center, Dayton, O., working in conjunction with McDonnell. Also cooperating on the project are the U. S. Navy's Bureau of Aeronautics and the National Advisory Committee for Aeronautics.

Approximately one month of flight testing will take place at Lambert-St. Louis municipal airport before the XF-88B is ferried to Langley Field for NACA research. Ten-foot propeller blades will be used in the first test phase.

Take-offs on initial flights will be made with the propeller "feathered" until the fighter's jet power plant has carried it to an altitude of 20,000 feet at which the first turboprop "light-off" will be made. Philip Houghton, McDonnell test pilot, will be piloting the plane. He will be surrounded by instrumentation for recording data on propeller stresses, performance, and engine operations. All of this data will be recorded on a large photo panel behind the pilot for later study by flight test engineers.

The XF-88B is a modification of the McDonnell XF-88A Voodoo, a twin-jet fighter bomber developed for the Air Force under an experimental contract completed in August, 1950. Weighing more than 20,000 pounds, the Voodoo is 55 feet long and spans 40 feet. The XF-88B is somewhat longer but is lighter, due mainly to the removal of one fuel cell and all armament.

Smith Gets Navy Post, Succeeds Floberg

James Hopkins Smith, Jr., airline executive and a veteran naval aviator, has been named by President Eisenhower to be Assistant Secretary of the Navy for Air. He succeeds John F. Floberg, Jr., Chicago attorney and a holdover from the Truman administration, who resigned. Navy Secretary Robert B. Anderson wrote Floberg praising him on 3½ years service in the Department and for his help during the past six months of transition to the new administration.

Smith, 43, was formerly a vice president of Pan American World Airways' Atlantic Division and for the past three years a member of the board of directors of Slick Airways, a position he recently resigned. During World War II, Smith was a carrier pilot and later served on the staff of Adm. Arthur W. Radford, newly named chairman of the Joint Chiefs of Staff. Smith now holds the rank of captain in the Naval Reserve.

Norstad Gets Top Air Job in NATO

Early next month, Gen. Lauris A. Norstad, commander of Allied Air Forces, Central Europe, is slated to become Deputy Supreme Allied Commander for Air to Gen. Alfred Gruenther, who is succeeding Gen. Matthew B. Ridgway as commander of Supreme Headquarters, Allied Powers in Europe. In his new post Norstad will control all NATO air forces.

Six Airlines Sign Joint Labor Contract

In the first joint bargaining effort of consequence in the aviation industry, six airlines and the International Association of Machinists, A.F.L., have signed an agreement on general wage increases of nine cents an hour and other fringe benefits. The companies covered are Eastern, United, TWA, Capital, National and Northwest. The agreements are subject to confirmation by membership of the unions.

The estimated 20,000 employees covered by the new agreement will get the nine cent raise retroactive to January 1. This will boost mechanic rates to $2.27 per hour, except for Northwest Airlines mechanics who will get $2.25. Other benefits provided by the new contracts, which will remain in effect until June 30, 1954, include an increase in second shift differential pay from five to seven cents and third shift differential from 10 to 12 cents. EAL had already been paying the higher differential.

The agreement has been the goal of the Machinists for the past six years but airlines had generally been opposed to the plan. Recent negotiations were under the guidance of Leverett Edwards, a member of the National Mediation Board.

Preliminary negotiations on a possible agreement on economic issues only began April 1, with the formal bargaining beginning April 27. Progress toward an agreement had been slow, and Capital Airlines, United Air Lines, and Trans World Airlines have been hampered by brief walkouts by IAM members protesting the delays. Latest to suffer was TWA, which found about 170 New York area absentees reporting "sick" or not reporting at all on July 4. TWA maintained its schedules that day by ferrying in supervisors from Kansas City.

SUCCESS OF DOUGLAS R4D-8, the Douglas Super DC-3, has prompted Navy to ask for $37 million more for modifying approximately 100 more planes. USN already has about 100 of the "souped-up" DC-3's.

Navy Asks $37 Million For R4D-8's

A Navy Bureau of Aeronautics program calling for an expenditure of more than $37 million over the next two years for modernization of additional Douglas R4D (DC-3) aircraft has been disclosed in testimony before House Appropriations subcommittee.

Modification will presumably be let under contract to Douglas Aircraft Company and will involve conversion of an undisclosed number of aircraft to the R4D-8 version, Navy equivalent to the Douglas Super DC-3.

Funds requested are broken down into $19 million in material costs, all of which are being programmed by Navy for fiscal 1954. Labor costs totaling $18 million are being planned over a two-year span with $9 million being requested for fiscal 1954 and again in 1955.

Based on assumption that an additional 100 aircraft are involved in the project, labor costs per airplane would be approximately $180,000 and material costs including spares $190,000 for a total $370,000. Original Douglas price for conversion of commercial DC-3 to Super DC-3 version was $263,000.

Move confirms Navy satisfaction with earlier conversion of 100 R4D's by Douglas, first of which was flown in May 1951. Program called for complete overhaul installation of new wing panels, and change to Wright R1820-80 engines to increase payload by 50% and speed by 40-50 mph.

Modified airplane has a gross take-off weight of 36,800 pounds, carries a payload of 12,900 pounds, and has a range of 3340 miles.

North American T-28A Hit by Defense Cuts

The North American Aviation T-28A trainer has been eliminated from future U. S. Air Force requirements, assistant secretary for air, Robert Lewis, has disclosed. Information was not immediately available on whether the move represents a complete cancellation of past orders or only future procurement. Air force action will curtail but not eliminate production of the Wright R-1300 engine, powerplant for the T-28A now being built by Kaiser Motors Corp., Dowagiac, Mich. Div. The engine is also used in several helicopters and Kaiser is the sole source.

Navy officials reported that no plans are underway to cancel North American T-28B, more powerful version of the USAF trainer. Navy model uses a Wright licensed R-1820 engine built by Bridgeport Lycoming Div., AVCO Manufacturing Co., at Stratford, Conn.

ICAO Re-Elects Warner

The ICAO General Assembly in recent session at Brighton, England, has re-elected Dr. Edward Warner to serve as Council President for the next three years. Dr. Warner, who has held the post since founding of ICAO in 1947, had expressed desire last year to be relieved of the presidency.

In its closing session the General Assembly adopted a fiscal 1954 budget of $3,200,000 (Canadian) compared with the 1953 budget of $3,259,384, a figure substantially higher than that sought by the delegation from the United States, which bears the major share of ICAO expense.

Higher Fuel Cost May Force Upping Fares

Congressional probers have been told that the effect of recent price increases for aviation gas and oil on the scheduled air transport industry will be an estimated $12,000,000 in increased costs in 1954. This will again raise the issue of whether or not such an increase in expense can be absorbed by the airlines, or whether it will be possible to pass it on to the customer.

Milton W. Arnold, vice president-operations of the Air Transport Association, explained the situation as it confronts the airlines to members of the House Commerce Committee at hearings into the latest series of avgas price hikes. He told the committee the airlines were in no position to question such action taken on the part of the oil industry but did want to advise them of what the effect will be in air transport.

In his statement, Arnold said: "Generally, airline contracts for aviation gasoline have a price escalation based upon either the price of crude oil or the price of regular motor gas. Increases in the price of crude oil generally affect avgas to the extent of 2/10ths of 1¢ per gallon for each 5¢ per barrel increase in crude costs. Consequently, a 25¢ per barrel increase in the price of crude will result in a 1¢ per gallon increase to the airlines for avgas. It is estimated that during 1954 the scheduled airlines will burn about 1.2 billion gallons of avgas. Thus, the effect of the recent 25¢ a barrel increase in crude oil prices will cost the airlines some $12 million more than has been budgeted for that purpose. This increase in expense of $12,000,000 amounts to approximately 10% of the total net profit of the industry in 1952 before taxes ($116,962,375), and 20% of the industry's profit after taxes ($60,580,875) in the same year."

Arnold claimed that the airlines have made every effort in the past to absorb "increases of the type we are about to experience here, but it is obvious that the airlines cannot continue to follow the practice forever." Because of the very character of the air transport business and its regulations, he said, the airlines cannot and have not automatically passed on to their customers many previous increases in their costs. "We do not know whether the airlines will be required to absorb this latest increase in expense, or will be able to recover the amount by rate increases," he added.

TEMCO Will Finance And Build Prototypes

Temco Aircraft Corp., whose prime contracts for second-source production of the McDonnell F3H Demon carrier jet fighter were recently canceled by the Navy, has decided to renew its attempt to sell one of its own plane designs to the military. Robert McCulloch, president, says the first step will involve Temco's building "one or more" prototypes of past designs at its own expense.

After the prototypes are built, Temco is planning to deliver them to the Navy and Air Force for evaluation testing. McCulloch reports Temco's entries in previous military competitions have drawn "extremely favorable comment" but that his firm's "realistic" appraisals of cost and lead time have been so far advanced that the services consider them "optimistic." He adds that the finished prototypes will convince the Navy and Air Force that Temco's appraisals are accurate.

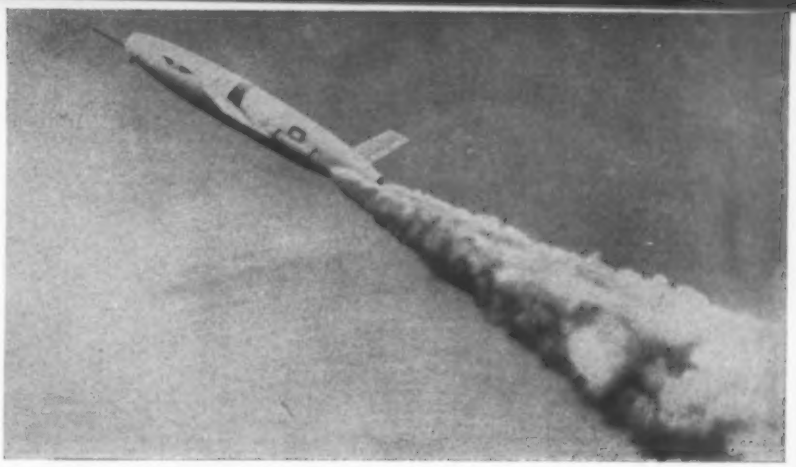
Meanwhile, in a move designed to stabilize employment and make for fuller utilization of its facilities, Temco has embarked on a program to obtain more subcontracting work. It has already lined up a subcontract from McDonnell to produce F3H components which will amount to about 35% of a completed Demon.

The McDonnell contract will require Temco to hire 1,300 more workers at Dallas and 500 more at Garland, Tex., by December. Last month's cancellation meant the layoff of about 1,000 employes.

Wright Sets Up European Subsidiary

In a quick follow-up to Republic Aviation Corp.'s establishment of a paper subsidiary in Europe (to obtain prime contracts from the USAF in Europe which are then farmed out to European plane companies), Curtiss-Wright Corp. has created its 10th division, at Amsterdam, Holland, to provide European sources for parts output of C-W's J65 Sapphire jet engine.

Known as Curtiss-Wright Europa N.V., the wholly owned Dutch firm will probably sign contracts with USAFE for production of parts for overhaul of the J65 which powers the Republic F-84F Thunderstreak. The F-84F is scheduled to be delivered to various NATO and other friendly nations under the MDAP program.



CHANCE VOUGHT'S REGULUS missile, shown here an instant after take-off from the deck of an aircraft carrier, has been recovered as many as 10 times during test flights, according to the Navy. Recovery record is cited as a tribute to Sperry's automatic control system used for the Regulus.

News Briefs

Howard Hughes asked RFC's Los Angeles office for another extension on his **HK-1 flying boat.** Under previous extension, craft was to have been in the air by July 1.

Air Research and Development Command is opening helicopter (7-passenger Sikorsky H-19) **courier and shuttle service** for high-level personnel between Baltimore headquarters and Washington.

NATO forces in western zone of Germany will soon receive the **first air wing** fully equipped with North American F-86F Sabrejets.

Charles F. Horne, former CAA Administrator, has been named manager of Pomona (guided missile) division of Consolidated Vultee Aircraft Corp., succeeding Gage Irving, resigned.

County Airport Corp., Gulf Oil subsidiary, has contributed $12,375 to pay CAA personnel **to operate the control tower** at Westchester County (N.Y.) airport for next three months. Tower is one of 18 eliminated by CAA July 1. County officials are continuing efforts to have CAA again foot the expense.

California Central Airlines, intrastate operator, was continuing to fly its schedules **despite strike of AFL-Machinists** members who are seeking pay raise and other benefits. Supervisory personnel were servicing company's Martin 2-0-2's and DC-3's.

Pan American World Airways, which operates a B-23 executive plane, is **first scheduled airline** to join National Business Aircraft Association, new name for Corporation Aircraft Owners Association.

City of Reno, Nev., **will buy Hubbard Field** from United Air Lines if Congress votes federal aid airport funds and if CAA decides Reno rates a federal grant. State air national guard has earmarked $1,750,000 for runway extension and other improvements if field becomes municipally owned. Otherwise, squadron will move to Las Vegas. If deal goes through, Reno will leave some field facilities to UAL.

Earl Wadsworth, 37-year veteran with Post Office Department, has been named PO's director of air service.

Delta-C&S Air Lines **will sell 12 DC-3's** that were operated by C&S before the merger, as soon as sufficient Convair 340's are delivered. Company now has seven Convairs, will have full order of 20 by next January. The 18 DC-3's belonging to pre-merger Delta (25 seats against C&S' 21) will remain in service.

Airlines' **10% fare discount** for military agencies was approved by CAB for year ending June 30, 1954. Discount was offered by domestic scheduled airlines plus members of Independent Military Air Transport Association and Aircoach Transport Association.

Each of **2,040 commercial flights** with which Air Force will supplement its own airlift to Far East in next 12 months will cost an average of $21,317, according to testimony before House Appropriations subcommittee. Total commercial airlift cost was estimated at $43,487,000.

PROTOTYPE TRANSIT VAN operation, shown here, gained sufficient support to promote U. S. Air Force interest leading to the decision to stage full-scale tests in the Far East and in the U. S.

U. S. Air Force To Test Transit Vans

High level program pushing tests of novel shipping concept in Far East and U. S. next month.

THE U.S. AIR FORCE AIR MATERIEL COMMAND, apparently operating with instructions from high levels in the Pentagon, has placed a $600,000 order with Transit Van Corporation of Redwood City, Calif. for 12 of the company's universal cargo containers, and has mapped out a schedule for operational evaluation of the Transit Van system of transportation that could very well revolutionize the handling of all military materials shipments.

Air Force project calls for use of the Douglas C-124A Globemaster as the airborne carrier of the van units. Tests are slated to begin next month both in Far East Air Force airlift operations between Japan and Korea and in the U.S.

Strong indication of top-level interest in project is the special handling assigned it by USAF. Basically a development project, the Transit Van show is being staged by Air Materiel Command headquarters at Wright-Patterson Field, in Command Packaging Office of Col. Robert L. Mason. Program is set to operate completely independent of Air Force research and development organization set up for such purposes, and stands to be in direct conflict with work going on in ARDC in materials handling field.

Air Force is planning a two-phase program:

• Volume operation will be studied in use of the Transit Van in Far East Air Force airlift flights. Two squadrons of 374th Troop Carrier Wing C-124's carrying two and sometimes three Transit Vans per flight will transport materials to Korea and repairable equipment on return flights.

• Cost study of all phases of van operations will be conducted in similar C-124 operations between AMC Air Depots in the States. Air Force will experiment with new packaging methods permitted by van shipment to reduce tare weight, accumulate data on savings in reduced ground time, and develop loading and unloading methods.

Transit vans on order by USAF measure 8 x 8 x 20 feet and are designed for a 12,000 pound cargo load and a volume of 11,000 cubic feet. Construction will be aluminum and magnesium, and complete units are believed to weigh about 2,000 pounds, less undercarriage.

Layout and dimensions of the C-124 appear ideally suited for the test. Cargo door dimensions are 11′ 4″ wide by 11′ 8″ high to which the van undercarriages are being designed. Fuselage floor length in the C-124 is 73′ 8″, and will permit loading of two vans for long flights, or three for shorter segments where payload-range will permit.

Revival of the Transit Van project comes as no surprise considering the wide interest shown in aviation circles several years ago when concept was first introduced. At that time John Alison, president of Transit Van Corporation, and former Undersecretary of Commerce for Air, discussed the system at great length before the then-active Prototype Aircraft Advisory Committee.

Company was not then ready to push airborne phase of its van system operation, and concentrated its efforts in working with railroads on its use in transfer operations between truck and rail car movements. Original concept of Transit Van was developed by Hodges Research and Development Co. of Redwood, Calif., where study pointed up need for a universal van that was readily transferable between truck, rail car and plane. As a result, TVC was set up as an independent company to pioneer in the field.

Past bottleneck in progress on airborne end of the system has been the lack of a suitable aircraft. Recent Air Force decision, however, overcomes this problem, and will permit complete appraisal of value of Transit Van without waiting further for the development of a special airplane for the purpose. Only major difference is that in C-124 vans will be wheeled into fuselage, whereas basic Transit Van concept calls for transfer of van container alone from truck trailer to fuselage.

One past proposal for airborne carriage of the Transit Van involved several versions of the Northrup Aircraft Co. All-Wing Cargo Pack plane, on which original development work was dropped because of military production requirements. A twin engine turboprop version called for a gross weight of 206,000 pounds, an empty weight of 101,349 pounds, and ability to carry four vans.

This model had a 172-foot wing span, was 80 feet 2 inches long and 33 feet high. With speed estimated at close to 400 mph, it was proposed to carry a 33 ton payload 3500 miles at a 9-10¢ per ton-mile operating cost.

Heavier version, a four engine model to be powered by Allison 500-C1 turboprop engines would have had a gross weight of 283,000 pounds, an empty weight of 124,000 pounds, and carried four vans 3685 cubic feet remaining for passengers or loose cargo. On this model wing span was 184′ 2″ and length 102′ 9″. Speed was 380-400 mph, carrying a 35 ton payload over a range of 3500 miles.

With the problem of airborne carriage of Transit Vans overcome, and USAF test should bring many answers, the universal aspects of the system will be fulfilled. A van shipment could then be loaded at a factory, trucked to an airport or railroad station, and transferred to a plane or rail car without additional handling of the cargo. Upon arrival at destination, it could be offloaded to another truck and delivered to a congested downtown location, completing its entire trip without intermediate handling. • • •

WHAT HAPPENS TO WILLOW RUN plant of Kaiser-Frazer is raising almost as much furor as the cancellation of the contract for the C-123B which was to be built there.

Detroit: Hardest Hit By Defense Cuts

"Arsenal of Democracy" first victim of the air power defense cuts which scuttled second source program.

THE Detroit area, center of production know-how and hub of the "arsenal of democracy" in World War II, is rapidly being phased out of the aircraft production picture, with almost all of the changes taking place since the new team of civilian defense leaders took over at the Pentagon. The situation is even more ironic since the top man, Defense Secretary Charles E. Wilson, is a former Detroiter and is fully aware of the capacity and productive ability of the automotive companies which were assigned important roles in building up the nation's air power before he took over.

Before January 20, plants in Detroit and its environs held several billion dollars in aircraft contracts and subcontracts. This was partly as a result of an Office of Defense Mobilization directive late in 1951 (when shortages of steel, copper, and aluminum were forcing layoffs in the automobile industry) but principally because the Air Materiel Command's Industrial Planning Division before Korea had planned to increase plane, engine, and parts production in the area if an expansion of the USAF and Naval Aviation was ordered.

Among the major Detroit companies which were brought into the aviation program after Korea were:

• **Packard Motor Car Co.**—Assigned construction of the General Electric J47 engine.

• **Kaiser Motors Corp.** (Kaiser-Frazer)—Holders of contracts to build 159 Fairchild C-119's and 244 Chase C-123B's at Willow Run, and Wright R-1300 piston engines at Dowagiac, Mich.

• **Chrysler Corp.**—Built a Navy-owned plant at Utica, Mich., to turn out Pratt & Whitney J48 jet engines.

• **Buick Motor Division,** General Motors Corp.—Assigned second-source output of the Wright J65 Sapphire jet engine.

• **Continental Aviation and Engineering Corp.**—Bought rights to produce nine small French Turbomeca jet engines.

• **Lincoln-Mercury Division,** Ford Motor Co.—Ordered to produce the Westinghouse J40 at a new Navy-owned facility at Romulus, Mich., and J40 parts at another plant in Wayne, Mich.

• **Briggs Manufacturing Co.**—Subcontractor for more than $20 million in parts for the Boeing B-52 bomber.

• **Hudson Motor Car Co.**—Holder of a large contract to produce parts for the Boeing B-47 Stratojet.

In every case with the exception of Buick's J65 program, the Detroit companies have either had their contracts canceled, reduced, or otherwise modified.

• Because of better service life on the J47, all orders for the engine have been reduced or stretched out, and Packard will phase out its jet engine program in 1954.

• Kaiser's orders for the Fairchild Packet and Chase Avitruc have both been terminated, but scheduled output of the R-1300 engine is as yet untouched.

• Chrysler's J48 facility is almost completely tooled but was eliminated from the program in the January, 1952 stretch-out of the aircraft program. It is now delivering some jet engine parts, and some work for an Army guided missile has also been assigned to Utica.

• Orders for Turbomeca engines form the Navy and Air Force have not been forthcoming as readily as Continental had hoped. The Cessna jet trainer, which won a USAF trainer competition earlier this year, is slated to be powered by two Continental-Turbomeca Marbore engines, but there have been some reports that the Cessna plane will be eliminated from the program.

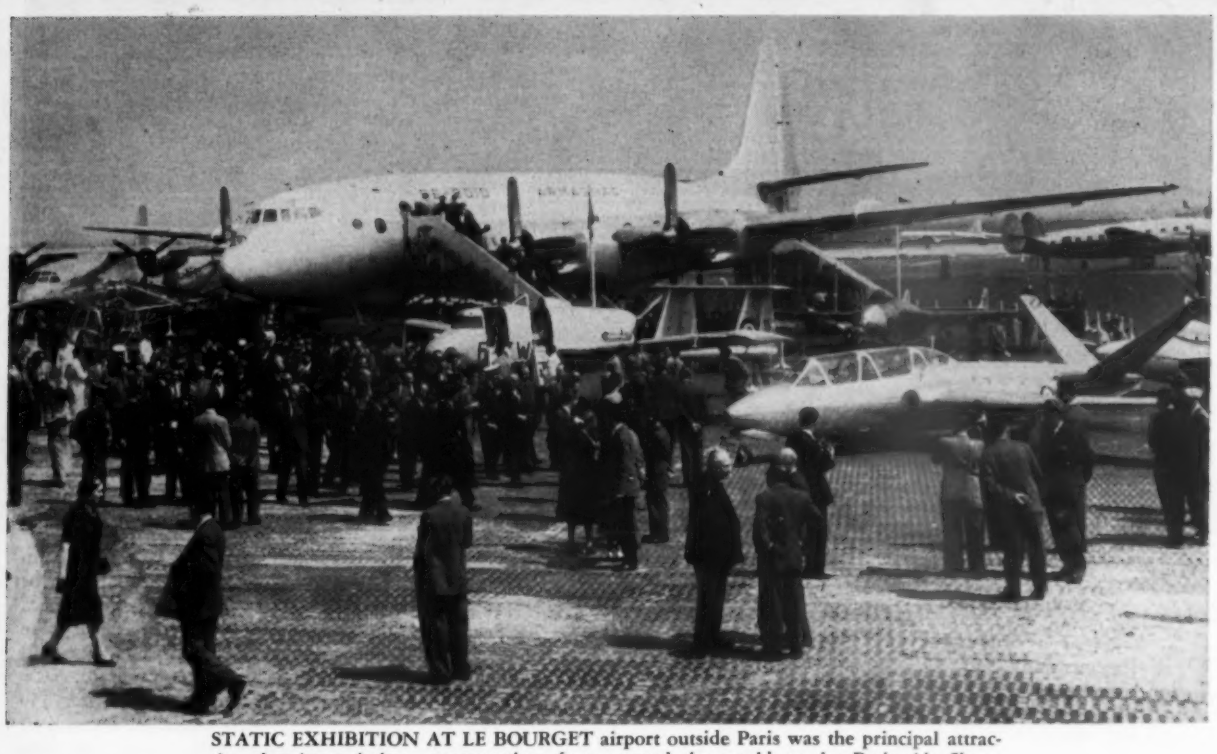
• Lincoln-Mercury's orders for J40 engines have been cancelled because of "changing requirements" and the plant at Romulus is now scheduled to become part of the Navy's reserve. Backlog of orders when the decision to cancel was made was $154 million.

• Briggs' president E. E. Lundberg says $20 million in parts orders for the B-52 has been transferred by Boeing to other subcontractors "because of a shortage of skilled workers and because of the requirements of automobile production at the company's plant." Briggs, however, still retains some B-52 work.

• Hudson's orders for B-47 parts were reduced to "better distribute work between Hudson and Boeing" but no indication was given as to the amounts involved.

The subcontract reductions involving Briggs and Hudson presumably are part of the growing aircraft industry pattern to pull back some of the work previously farmed out, and there may well be legitimate reasons for knocking out Lincoln-Mercury, Kaiser, Packard, and Chrysler. But the overall result is one of eliminating many firms from the picture which had extensive experience in aircraft and engine production during World War II and picked up more after Korea.

It is virtually impossible to add up the cost of bringing Detroit companies up to a point where they were getting ready to mass produce and then ordering them to get out of aircraft but the figure undoubtedly will run into the hundreds of millions, counting not only the new plants which were built and the machine tools to equip them but also the cost of cancelling the contracts. • • •



STATIC EXHIBITION AT LE BOURGET airport outside Paris was the principal attraction drawing aviation representatives from around the world to the Paris Air Show.

French Dilemma: Prototypes, No Production

Helicopters, convertiplanes and transports show promise but Paris Show emphasizes lack of production.

By ANTHONY VANDYK

PARIS, FRANCE — "International" was the operative word in the "Twentieth International Aeronautical Salon" held at Le Bourget Airport, Paris, June 26 through July 5. The Paris Air Show, located for the first time entirely at the airport (formerly all stands were in an exposition hall in downtown Paris), featured a high proportion of foreign exhibits. In the flying displays it was the foreign aircraft that provided the most spectacular demonstrations of aerobatics.

Nevertheless, it was essentially a French show, garnished by foreign participation. On the French side, the Paris show was once again principally a show of prototypes although several production types were represented. Currently two of the major production items are basically foreign, even though they bear French names—the SNCA du Sud Est Mistral (de Havilland Vampire) and Hispano-Suiza Verdon (Rolls-Royce Tay). The Verdon engine, however, develops more power than the original British model and, with an afterburner, will give about 10,000 pounds thrust.

In addition to the Mistral, SNCASE is producing another de Havilland fighter, the Sea Venom. Another major production item is the Dassault Ouragan and its successor (with various series), the Mystere. At the Paris Show, the Dassault company seemed more interested in promoting its MD 316 twin-engine light transport and its program to build Armstrong Siddeley Viper jet engines than in presenting its combat aircraft.

The Paris Show clearly demonstrated that the major production and development role of the French aircraft industry is fighter aircraft, particularly stripped-down models. The SNCASE Baroudeur, which should be flying by the time this is in print, uses a rocket-propelled trolley to enable take-offs to be made from small, rough fields. SNCASE also has a stripped-down fighter project known as the Durandal, a delta-wing Mach 1.4 model slated to fly in 1955.

Productionwise the SNCASO 4050 Vautour all-weather fighter/attack bomber is one of the most promising French aircraft. This twin-jet plane is in the supersonic category and is cheap and easy to produce mainly due to a special bonding process developed by SNCASO.

Perhaps the most interesting model exhibited by SNCASO was the Farfadet convertiplane which has just started its flight trials with a Turbomeca Macardau turboprop in its nose. SNCASO's Djinn helicopter attracted particular attention due to its quietness—compressed air is supplied to the rotor tips. SNCASE is also active in the helicopter field.

Incidentally, both Igor Sikorsky and Frank Piasecki were among the numerous visitors to the Paris Show who were impressed with French progress in the rotorcraft field.

France continues to strive to regain her former eminence in the transport field, and the Paris Show gave indication that limited success is being achieved. Certainly, the Hurel Dubois HD 31 attracted very considerable attention and was the subject of many laudatory remarks. This writer was privileged to fly in this "DC-3 replacement" prototype and is able to record that flight performance and handling qualities are fully up to the manufacturer's claims.

A military version (HD33) of the

RESEARCH AIRCRAFT . . . like the Trident . . .

FIGHTER BOMBERS . . . like the Vautour . . .

CONVERTIPLANES . . . like the Farfadet

HELICOPTERS . . . like the Djinn . . .

FIGHTERS . . . like the Dassault Mystere IV . . .

TRANSPORTS . . . like the HD-32 were . . .

ALL ON HAND FOR THE PARIS AIR SHOW

production transport (HD32) is under development. Hurel Dubois is also designing a large four-engine model, to be powered by Wright turbo combpound engines, in addition to the HD45 jet transport.

The French government has ordered two prototypes of twin-engine jet transports—the HD45 and the SNCASE Caravelle. The latter aircraft will have a Comet nose section supplied by de Havilland. Both planes are designed for medium-range operations.

In the transport field, the most interesting production item shown at Paris was the Nord 2501, a plane resembling the Fairchild C-119, although rather smaller. Primarily a military model, the 2501 has, nonetheless, been orderd by two Brazilian airlines as a result of a recent demonstration tour in South America. Also on show at Paris was that "Cinderella" aircraft, the Armagnac. One of these transports is being converted into a flying testbed for the SNECMA Vulcain turbojet, which reportedly develops some 13,000 pounds thrust with water injection.

Although German influence is still apparent in the SNECMA Atar series and Hispano-Suiza has devloped no jet engines of its own design, there is one French engine company whose original designs are winning worldwide reputation—Turbomeca. In the high-power field, however, despite the Vulcain's promise, it seems likely that France will have to rely on foreign designs for some time to come. Indicative of this is the news that Hispano-Suiza will soon start production of the Rolls-Royce Avon.

Perhaps the most interesting engine exhibit at Paris was a U. S. model, the Pratt & Whitney PT2F-1 turboprop (civil version of the T34) which unexpectedly was shown here publicly for the first time anywhere. Also on show was a Wright J65 Sapphire displayed, coincidentally, a few feet from the Sapphire on the Armstrong Siddeley stand. Security prevented Curtiss-Wright officials from discussing "specs" of the J65 but data on the British engine was readily available in the Armstrong Siddeley stand.

The SNCASO 9000 Trident merits attention. It is a supersonic research aircraft with stub wings, powered by rockets and a Turbomeca Marbore at each tip (so far it has not flown with rocket power). Another experimental plane, the Nord 2200, made is first appearance on July 4 and gave observers the impression that it was an overgrown Sabre; no government contract has been awarded for this model.

In the trainer field, the Fouga 170R, Morane Saulnier MS 755 Fleuret and SIPA 200 Minijet confirmed France's lead in the field of light jets. Unfortunately, however, like in so many other French cases, when questions are asked about production, silence ensues. This is not the fault of France's highly efficient and keen aircraft industry but of a budgetary situation which prevents France from supporting her industry with sufficient production orders. Fortunately NATO is assisting in the combat aircraft field, and it is to be hoped that means will be found to enable the several promising French designs in other categories to reach the production stage that they merit.

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Final Effort Being Made To Save C-46's

Four major transport groups band together to make changes which will permit continued use of the Commando.

by J. S. MURPHY

FIRST REAL SIGNS that the confused and controversial issue of the status of the C-46 airplane will finally be clarified are fast taking shape. With the December 31, 1953, deadline, by which time C-46's are required to meet CAA's transport category rules, less than six months away, accelerated high-level government and industry steps show promise of a solution.

In separate recent actions:

• Joint CAA-CAB position on what should be done has been set down by CAA Administrator F. B. Lee. Indication that the December 31 date is open to extension is included.

• Industry has united into one group representing all civil operators of C-46 through a revamped Aircraft Engineering Foundation organization.

• The AEF has retained top engineering talent in the person of Ben O. Howard, well-known pilot engineer and aviation consultant, to spearhead a modification program which is destined to receive full CAA-CAB backing.

Widest breach that exists now between the thinking of the two parties, and one that is by no means incapable of solution, concerns C-46 performance: specifically, whether power should be added or gross weight reduced so that the airplane will meet T-category performance.

CAA-CAB thinking, expressed by Lee, is that performance should be improved to bring the C-46 in line with other large transports operating today in similar types of service. Industry stand is that safety is the real issue at stake, and that the past accident history of the C-46 points elsewhere for the solution.

Instead, the industry proposes and will submit to CAA a three phase program to (1) correct the causes of past accidents by aircraft modification, (2) insure the best performance in operation with the least likelihood of crew error through use of more positive flying techniques and procedures, and (3) organize to oversee the future C-46 operation to maintain its integrity both in equipment and operating practices.

The program will be spearheaded by Howard and the new acting president of the Aircraft Engineering Foundation, Monte Snedeker. It will center most effort on improved flying techniques, with some changes to the airplane to encourage better flying practices.

Major new cockpit aid for better flying is the proposed installation of a Minimeter, a mechanical indication built into the airspeed indicator. It is adjustable for aircraft gross weight and spells out to the pilot the absolute minimum speeds for takeoff, climb, cruise for best range, approach, and landing. The Minimeter, which was developed by Howard during early World War II days and manufactured in limited quantity by Kollsman Instrument Co., has seen service on presidential airplanes, including the original Sacred Cow, Independence, and currently the Columbine.

The Minimeter

Other prominent fix being studied by the industry would guarantee instant propeller feathering of a failed engine while preventing possibility of feathering the wrong engine. The proposal here calls for a form of auto-indication of engine failure. A signal is produced by an electrical switch actuated by lateral movement of the engine when complete power loss is experienced. The switch would be wired through the throttle and would actuate a warning signal at propeller feathering button for each engine.

Acceptability of such an auto-indication system as a substitute for troublesome automatic feathering systems on other transports has been widely discussed in the past. This proposal may well prove the key to solving CAA-industry differences on T-category performance. The reason is that the present 45,300 pound gross weight is authorized on basis that autofeathering exists and CAA-CAB stand is that this authorization cannot be continued indefinitely. Auto-indication, however may be accepted as the substitute.

A much discussed proposal that newer Pratt & Whitney R-2800 CB-16 engines be installed appears to fall into this category. The operators contend that added power is not needed and cost of this modification would be well over the $100,000 mark.

Other aircraft modifications being studied to eliminate past accident causes are:

• Nacelle rework—aimed at lowering cylinder head and oil temperatures. Probability is that design will call for a higher capacity oil cooler.

• Increase engine power—prominent item here is study of redesigned exhaust system to reduce back pressure including use of jet stacks. Good results have been reported on such a program on the Convair 240.

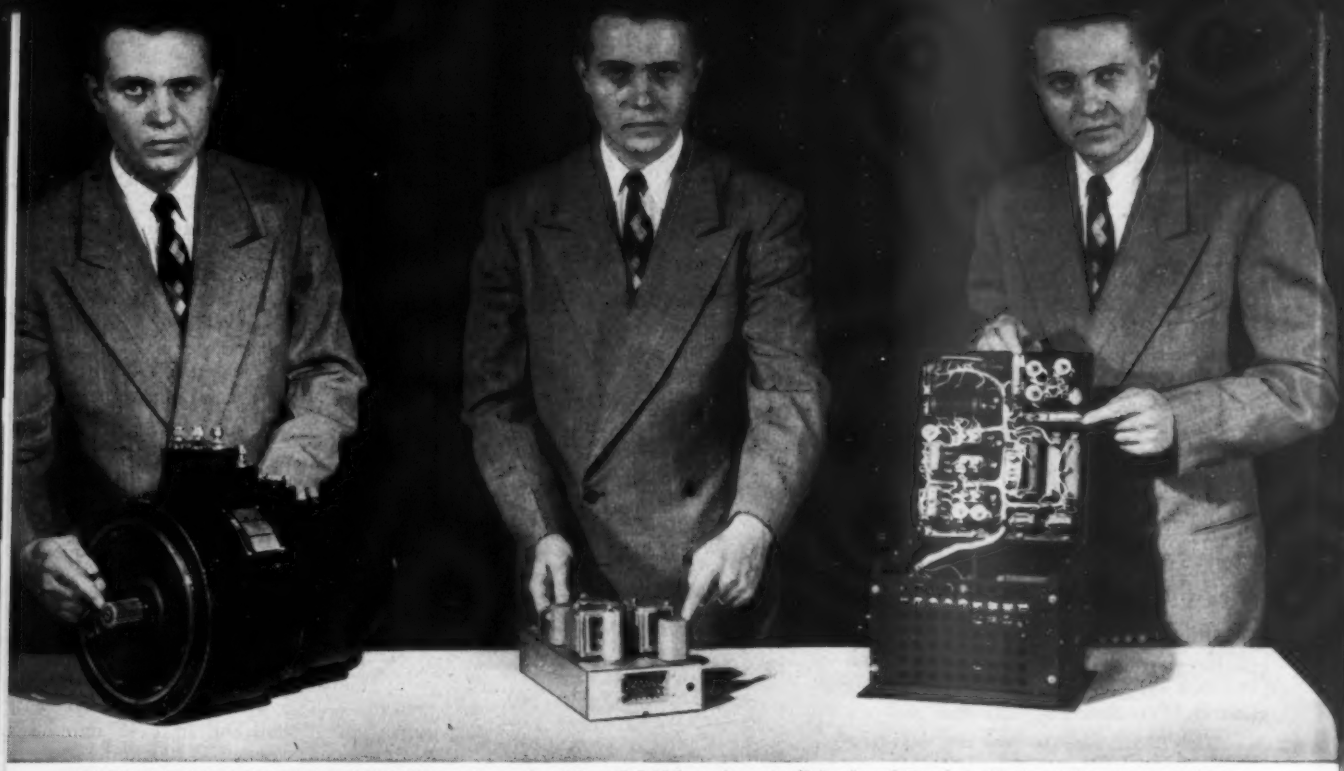
• Reduced fire potential—installation of a stainless steel baffle between the engine power section and accessory area is being designed with four known versions underway by American Airmotive—Miami, Aerodex Inc.—Miami, Flying Tiger Line, and Conner Air Lines, Inc. Change would bring R 2800B series engine installation in C-46 into the conventional Zone 1-2-3 design.

• After shutdown ventilation—a source for past ignition harness damage and resulting spark plug malfunction, as well as loss of engine power, is on the correction list. Group is also considering a simple bi-metallic cowl plate which would remain open under high engine section temperatures and close automatically when the engine cools.

• Wheels-up landings—cause of five past C-46 accidents will be corrected by use of a simple mechanical interlock between the landing gear and flap control handles, so that neither full flaps nor extended gear could be obtained without the other.

Improved pilot flying technique and equipment modifications are but two phases of the proposed program. The Foundation also plans to keep on top of the overall C-46 operation on a wide scope. Current status of engineering changes and fixes will be watched, and group will work toward a means for insuring that acceptable minimums are met both in fitness of equipment and crew proficiency.

Full support of program among C-46 operators is demonstrated in make-up of new Foundation board of directors under chairman Howard Korth, president of American Air Export & Import Co. Group includes large and small operators represented by four airline associations: Air Transport Association (ATA), Aircoach Transport Association (ACTA), Independent Military Air Transport Association (IMATA), and Transport Air Group (TAG). • • •



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Corporate Aircraft Mobilization Assured

Federal agencies approve plan designed to utilize large corporate fleet in emergencies.

by Lois C. Philmus

A PLAN FOR THE VOLUNTARY mobilization of corporation-owned multi-engine aircraft in the 12,500 pound gross weight or over category has been formulated by the National Business Aircraft Association (formerly Corporation Aircraft Owners Association) and jointly accepted on an interim basis by the Federal Civil Defense Administration and the Defense Air Transportation Association.

Jean H. DuBuque, executive director of NBAA, has been designated as national coordinator of the NBAA mobilization plan and will be responsible, insofar as possible, for designating regional operations coordinators to work with the 21 Regional Air Priorities Control Offices located at key airline communication centers throughout the U. S.

A separate emergency mobilization plan for business aircraft of the DC-3, Lodestar, and Convair category was necessary because of the highly specialized nature of executive flying compared to that of the airlines. Many NBAA members are engaged in defense production and, in implementing an emergency mobilization plan, it was necessary to emphasize the necessity for permitting maximum utility of NBAA aircraft and crews in connection with vital business pursuits.

The SCAT plan calls for utilizing airline communication networks and dispatchers during an emergency. The NBAA plan will utilize these communication centers but airline dispatchers will have no responsibility for assigning NBAA multi-engine aircraft. FCDA requirements will be communicated by the airline communication center to the NBAA aircraft mobilization coordinator, who, after conferring directly with the priorities officials and RAPCO personnel, will be directly responsible for directing and dispatching NBAA aircraft within his regions.

When the SCAT plan is put into effect after an emergency strikes, it will be up to the business aircraft flight crews to contact the nearest airline operations office, registering the type of aircraft and state of readiness. Aircraft on the ground will phone in on the same procedure method. FCDA, in the meantime, will have contacted the RAPCO offices and detailed immediate requirements. RAPCO in turn contacts the airlines and other communications centers and it is at this point that the NBAA aircraft mobilization coordinator and his operations coordinators take over.

The operations coordinators then proceed along plans previously made with FCDA calling for detailed procedures of carrying civil defense traffic, including passengers, cargo, patients, etc., as needed.

NBAA will then operate independently of airline communication system, outside of up-to-date messages concerning additional requirements. Priority passengers and cargo will be carried by the business aircraft on direct assignment from FCDA. Flight plans will be filed through the CAA air traffic control system. On completion of each mission, the aircraft will once again coordinate with the aircraft mobilization or operations coordinator for further instructions.

Standby Contracts

FCDA is to arrange stand-by contracts to cover operation and maintenance fees, flight crews salaries, identification insignia, credentials, and insurance protection before the plan will be effective for a national emergency. All procedures for the executive aircraft to carry defense traffic are to be formulated prior to actual implementation.

This simplified plan was formulated after due consideration of the advisability of matching the anticipated civil defense requirements to all air transport availability. This was ruled out as being too unwieldy when speed and simplification was of the essence. It was felt to be more efficient to allow adjustments to scheduling of aircraft to local requirements, since transportation requirements during an emergency would, in any event, outweigh availability.

NBAA, FCDA, and DATA have agreed in principle to the voluntary mobilization of executive aircraft and it is now to be cleared through the Office of Defense Mobilization. The board of directors of NBAA worked out details of the mobilization on advice and suggestions from its membership. But the plan is open to non-members who wish to volunteer aircraft for emergency use.

Other steps necessary for implementation of the plan are for FCDA to work with state civil defense organizations to relate NBAA multi-engine aircraft from direct supervision of state civil defense organization and to work out agreements with the military to insure business aircraft operators against arbitrary martial law. FCDA is also to spell out details of the plans and procedures to all civil defense organizations.

The airlines will be made cognizant of the NBAA plans by DATA, operating through the Air Priorities Board. The plan also calls for DATA to arrange participation of non-scheduled carriers and other outfits who can make contributions to the system.

The separate plan for utilizing executive multi-engine aircraft allows full voluntary participation by the owners while insuring the owners retention of their identity. • • •

CHECK LIST FOR MOBILIZATION OF BUSINESS AIRCRAFT

IF IN THE AIR, land at the nearest airport and immediately notify airlines operations office.

IF ON THE GROUND, phone in state of readiness to nearest airlines operations office.

AIR TRANSPORTATION REQUIREMENTS will be transmitted to communications centers by FCDA.

NBAA AIRCRAFT MOBILIZATION DIRECTOR will confer with Priorities and RAPCO as to requirements.

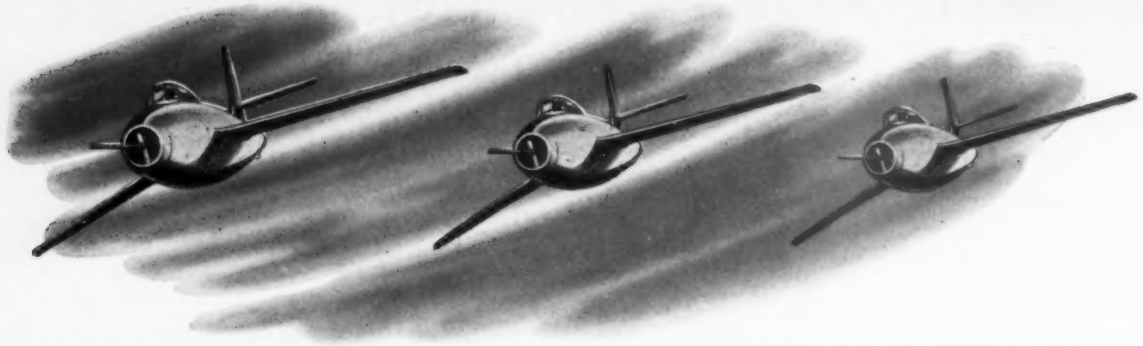
DISPATCHING OF BUSINESS AIRCRAFT will be handled by mobilization or operations coordinator.

AFTER RECEIVNG INTRUCTIONS, aircraft operators will operate independently of airline communications centers.

FCDA WILL ASSIGN LOADS of essential passengers and materials and designate destinations.

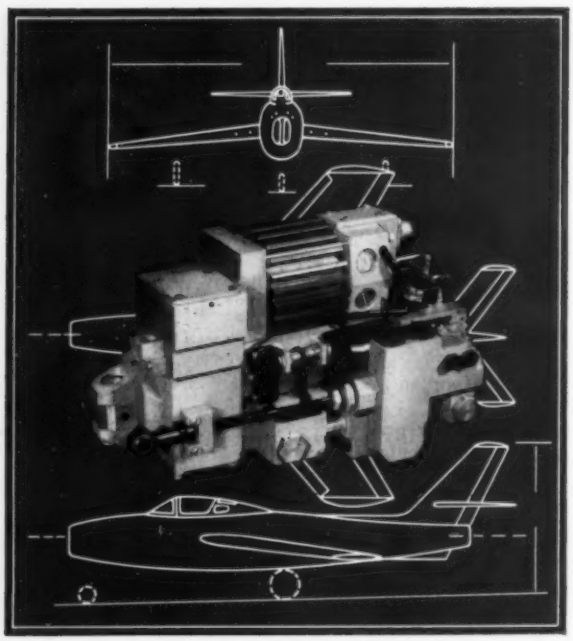
FLIGHT PLANS WILL BE FILED directly through CAA Air Traffic Control facilities.

ON ARRIVAL AT DESTINATION, aircraft crew will check for further instructions with NBAA coordinators.



AEROPRODUCTS ACTUATORS CONTROL "FLYABLE TAIL"

Self-locking features aid Republic's new F84F



Typical Aeroproducts Actuator

The broad adaptability of Aeroproducts actuators has helped to solve problems encountered in the design of the "flyable tail" of the new Republic F84F jet fighter. The application of these actuators permits instantaneous adjustment of a variable surface to any position within its design range. The self-locking feature of Aeroproducts actuators secures the adjustment until it is changed by the pilot.

Any combination of systems—hydraulic, pneumatic, electric or manual—can serve as the primary power source for Aeroproducts actuators. They can be synchronized readily in tandem or in series to provide coordinated control of related movements.

Announced uses of Aeroproducts actuators include those for the control of the "flyable tail" of the Republic F84F, the horizontal stabilizer on another high-speed jet fighter and the afterburner nozzle in a jet engine. Additional applications include control of wing flaps, dive brakes, bomb bay or cargo doors, gun turrets, variable wing sweep and incidence, wing fold and canopy slides.

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DAYTON, OHIO

Smallest helicopter in Army's program is the American Helicopter Co.'s XH-26, an air droppable model.

Largest helicopter in Army's program is Hughes XH-28, for which the Army has assumed the complete development finances.

Nine Types of Planes Needed by Army

With almost $150 million for fiscal 1954 needs, Army is putting drive on for helicopters, convertiplanes.

A big fiscal year lies ahead for Army aviation—one calling for new funds approaching the $150 million mark. Included are multi-passenger fixed-wing aircraft required for the Army's mission in connection with artillery observation, battlefield reconnaissance, and short-range transportation, cargo-type, small utility-type helicopters, and drone target aircraft used in anti-aircraft artillery practice.

A good portion of the funds is earmarked for the Army's helicopter program, according to testimony presented before the House Armed Services Appropriation subcommittee. The Army rotor craft program calls for the procurement emphasis of the fiscal 1954 funding period to be placed on smaller 1½-ton-types since larger helicopters are not immediately available. The less expensive craft can be used to accumulate operating experience more quickly by more pilots, it was pointed out.

"It is assumed that the usual 'learning curve' experienced by fixed wing aircraft producers will apply to helicopters and that the Army's helicopter simplification program will greatly reduce unit cost in future year procurement," Brig. Gen. P. F. Yount, acting chief of transportation, told the House committee.

Primary application of the helicopter to the Army, General Yount said, is as a replacement for relatively short haul transportation in forward areas as local circumstances dictate. The rotor craft role in Army operations is that of a premium transportation vehicle to be used in lieu of Army trucks for:

• Logistical support of Army troops when enemy operations, terrain conditions, or their own advance has severed their normal supply system.

• Tactical operations with small reserve and maneuver elements to maintain the battlefield mobility required to counteract the enemy's operations;

• Logistical support of tactical special weapons to preserve their security and surprise capabilities;

• Tactical operations in conjunction with new special, highly destructive weapons to exploit shock and disorganization of enemy forces.

Stepped-up expenditures for aircraft for the Army air arm is an outgrowth of significant growing pains in Army aviation—especially in Korea. The record shows that at the start of the Korean War, the Army had only 1,200 pilots operating three types of planes. These included the two-place fixed wing observation plane, the multiplace fixed wing aircraft, and the utility helicopter.

No Duplication

In the three years of war, though, the number of Army aviators increased to approximately 3,000 with a third of them qualified to fly helicopters as well as fixed wing aircraft. The various types of Army airplanes have also tripled.

Army pilots are officers recruited from among those branches employing organic aircraft. They know the problem of the man on the ground because they are trained ground officers, returned to ground duty periodically to remain qualified in their basic branch of service.

"The Army is adopting aircraft as it adopted the motor vehicle not so many years ago, and it does not duplicate any function of the Air Force," General Rutledge said. "The Army's manner of employing aircraft insures that, regardless of the numbers of aircraft involved, it will not duplicate any function of any other service."

Helicopters have evacuated more than 12,000 casualties from forward areas. They carry urgently needed medical supplies. Both rotary and fixed winged aircraft are being used by the Army Signal Corps to install and maintain communications. Telephone wire can be laid to any point over all kinds of obstacles in a minimum of time, and radio relay stations can be sited in a matter of minutes where formally it took hours or days.

Army engineers are using aircraft to locate suitable bridging sites, to determine the condition of existing bridges and roads, and to find scarce building materials in a minimum of time. They use them in surveying and mapping operations, both for transportation to inaccessible areas, and as survey stations.

The army for several years has been depending on the airplane for observing artillery fire. Eight out of every ten artillery missions fired in Korea are adjusted by an observer in an Army airplane. Commanders at all levels now choose aircraft over-ground transportation for command visits and inspections, enabling them to maintain a much closer relationship with their frontlines than ever before. When President Eisenhower visited Korea last year, he was transported to various command posts and installations in an Army aircraft flown by an artilleryman.

Army aviation research and development is now working toward providing for Army use nine types of aircraft, according to Maj. Gen. Paul W. Rutledge, Assistant Chief of Staff for Development and Test, Army Field Forces. These nine types can be grouped

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The moral of this tale comes first! Don't sell youth short just because you're older in experience. You may be pleasantly surprised.

The Flying Tigers are less than ten years old, but we're already carrying quite a little weight in airfreight (over 41 million ton miles in '52). And we've got some spread around with other carriers (about 400,000 lbs. last month).

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into three general categories: fixed wing, rotary wing, and convertiplane, General Rutledge explained.

Fixed wing aircraft include:

Cessna L-19—two-place plane for observation.

DeHavilland (Beaver) L-20—multiplace plane for general utility.

Beechcraft (Twin Bonanza) L-23—command type for executive transport.

Rotary wing aircraft include:

Piasecki H-16A—Army participating financially in Air Force development of this helicopter.

Sikorsky S-56, S-58—Army participating financially in Navy development of these helicopters.

Hughes XH-28—Army recently assumed total financial support of this "flying crane" program.

American XH-26—a small collapsible, air droppable pulse-jet rotor plane developed by the American Helicopter Co. as a strictly Army project to investigate use of jet power in a helicopter.

Convertiplane work includes:

Contracts with McDonnell, Sikorsky, and Bell on three different approaches to the problem of controvertibility, in which an aircraft combines the vertical rising features of the helicopter with the higher speed, longer range features of a fixed wing aircraft. The Army initiated action for development of a convertiplane in 1950-51. The McDonnell model is expected to be ready for flight this coming winter.

"It is of particular interest to note that the aircraft first used by the Army, in the Louisiana maneuvers in 1941, were owned and operated by aircraft manufacturers, not the Army," General Rutledge said.

Growth of Army aviation during World War II was very rapid. From only 40 planes and pilots during the Tunisian campaign, it expanded to approximately 4,000 by the end of World War II. The types as well as the numbers of aircraft required by the Army increased as the mission requirements grew. First helicopters obtained by the Army were procured in 1947.

General Rutledge pointed out that a type field army in 1945 had some 240 aircraft of one type assigned it. This figure now approaches 900 aircraft per type field army, including six types of planes, he said.

Whereas the Air Force and Navy aircraft are organized into squadrons, wings, groups, and larger units, the great bulk of aircraft used in the Army is organic to its tactical or service units.

"The principle of its employment from the first has been that of closest support to, and control by, the ground unit," General Rutledge explained. "Since there is no more complete control than outright ownership, the airplane is therefore issued directly to the unit that needs it. • • •

A MILITARY COMMENTARY

Army Losing Battle of Willow Run

THE Air Force pulled the props out from under the Army's aerial assault potential when it threw in the towel on building the Chase C-123B. Army Secretary Robert Stevens wasted no time in jotting a note to Air Secretary Harold Talbott, reportedly screaming that the Army needs the assault transport as soon as possible and "see what you can do to get it, Talby."

When Talbott wiped out the C-123B contract on June 24, except for a small portion of the work far advanced, it meant "years of good effort down the drain"—not only for the Army but also the Air Force. There just isn't any other sky vehicle of its type around.

After years of trying to develop a suitable type aircraft in which to land combat troops on a battle scene as quickly and as safely as possible, the Chase plane had been recognized as the proper solution. With such a plane on tap, the Army wasted no time junking its glider program. Past experiences with engineless aircraft in ferrying soldiers to key battleground sites proved, in a number of instances, that the glider trooper was considered lucky if he could extricate himself from the wreckage to engage in combat. Thus, the Army was banking on the C-123B.

Perhaps the thing that really sold the Army on the C-123B was the fact that this service has always been interested in glider operations. And then came the C-123B, really just another glider—except that it had engines, two R-2800-83 Pratt-Whitney's. The Chase power glider was designated with other essentials that were not available during World War II airborne landing operations. Some of them are:

• The C-123B nose is built to bounce. It's loaded with crash protective materials to absorb impact in nose-heavy landings, guaranteeing added safety of the crew and passengers and the delivery of vital cargo even if the landing area suddenly turns up in short supply.

• Fuel may be jettisoned. To eliminate the hazard of fire in emergencies, the pilot can empty the C-123B tanks before setting the assault transport down on rugged, unfamiliar territory.

• The plane's construction is a soldier's dream because it's built for ease and speed in loading and unloading. A low loading floor and a self-contained (integral) loading ramp in the tail will cut down on aching backs. (Maybe that's why Army Secretary Stevens has raised such a fuss.)

• The C-123B configuration is good for paratroop drops or aerial cargo discharges without the fear of getting something or someone hung up on the tail assembly.

• Complete engine change can be accomplished in 45 minutes, providing you have a spare engine.

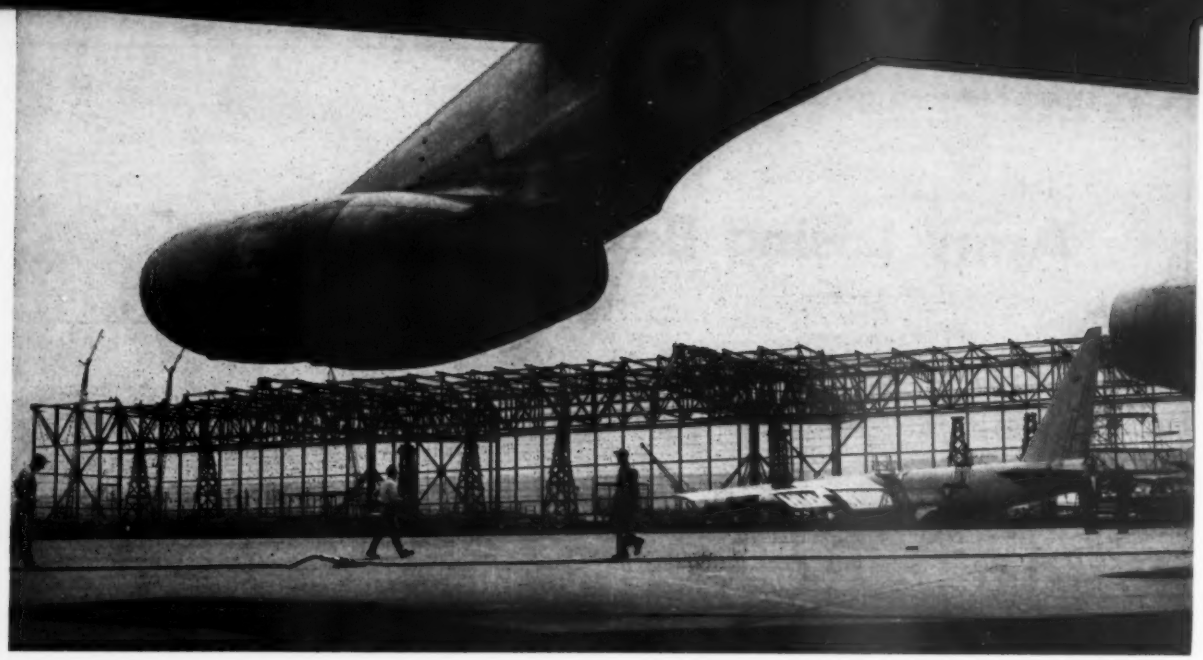
• Unlike the Fairchild C-119, the C-123B does not have booms splitting the flaps, thereby reducing aerodynamic efficiency in landings and takeoffs. (An "expert" mentioned this, Mr. Boutelle, although we realize your boom-splitting C-119's have been getting around all right.) The C-123B, however, gains full use of its flaps and is ideally suited for working out of short fields.

Cancellation of the C-123B contract comes at a time when many "support type" aircraft are being passed up in accordance with the budget reduction trend. But this particular aircraft has an even rockier history. It's been a bone of contention among its builders—those in the executive offices and those on the assembly lines. The Kaisers (owners of 49% Chase stock) and Michael Stroukoff (Chase founder, vice president, and holder of the other 51%) have their differences. And reports have come out of the big Willow Run plant where C-123B's were to be built that experienced aircraft workers are playing second fiddle to (of all people) auto workers, who are apparently gaining the distinction of becoming an "indifferent or lagging labor force." So all is not well.

Now lawmakers enter the picture. Michigan Republican Senators Homer Ferguson and Charles Potter, as well as New Jersey's Robert Hendrickson, have urged Talbott to consider giving Kaiser a fixed price contract to keep employment stable at Willow Run. New Jersey Senator Hendrickson wrote Talbott that "penalizing Chase as a prime contractor for performance failure by Kaiser, a subcontractor forced upon Chase by the Air Force, is unwarranted and intolerable."

Thus, the C-123B story at this writing is far from hashed out. The newest twist to the tale is that Consolidated Vultee Aircraft Corp., or perhaps Temco, down Fort Worth way, might wind up producing the power glider. Couldn't happen to a better airplane.

HARRY BAER



Five million dollar hangar now under construction at Seattle, shown here framed by the wing and shadow of the Boeing XB-52, will serve as Boeing Airplane Company's new flight test center when it is completed in October. Note YB-52 alongside hangar framework.

Navy's F7U-3 Cutlass, now in quantity production by Chance Vought in Dallas, Tex., is shown in new flight photo. The Navy has ordered an attack version of the carrier-based twin-jet fighter to be known as the A2U-1.

The Military Scene

Piasecki's H-21C helicopter, which recently lifted a useful load of 4,610 pounds, is shown in new flight photo. Normal gross weight is 13,300 pounds.

Senate Gets More Views on Jet Transports

A common civil-military specification for a jet transport aircraft that would facilitate jet transport prototype development is the recommendation of American Airlines president, C. R. Smith, stated in a recent letter to Senate Commerce committee chairman Charles W. Tobey (R., N. H.). Smith added that the next development in civil air transportation should be the turboprop powered transport, not the turbojet.

The AA executive sees "the advantages of the turboprop over the turbojet for civil use as equally applicable "to the military requirements, indicating that "there may or may not be good reasons for 'special purpose' airplanes for the military, but the basic transport should have similar characteristics and performance."

"The military services have been lagging in development of the turboprop engine," Smith said, urging that the program be accelerated. If this is done, he explained, and suitable engines become available, there would be no need for any additional assistance from the Federal government in the development of suitable transports for civil use.

MEET THE ALLISONS, the complete series of Allison jet and turboprops now in simultaneous production at Allison include (in the foreground) the J71, described as the most powerful U. S. jet, minus afterburner, in production; the J-35 axial flow engine, T-40 turboprop; J-35A-29 and J-33 centrifugal flow engine, in that order. Cumulative flight time of the group is over three million hours.

Aircraft Industries Association president DeWitt C. Ramsey, also replying to an inquiry from Senator Toby, declined to develop an industry position on jet prototype legislation, indicating that "it would be impractical to attempt to reflect the views of all (AIA) member companies because of the indicated wide range of views on the matter."

Ramsey did point out, however, that the British lead in jet and turboprop development will be overcome "in a relatively brief span of years."

Factors bearing on the time schedule for design, construction and operation of U.S. jet transports are plans of airlines to replace or augment present fleets, including economic factors; readiness of airways and airport terminals to assimilate the jets; in-flight noise problems in densely populated areas; and the current engineer shortage in aircraft manufacturing.

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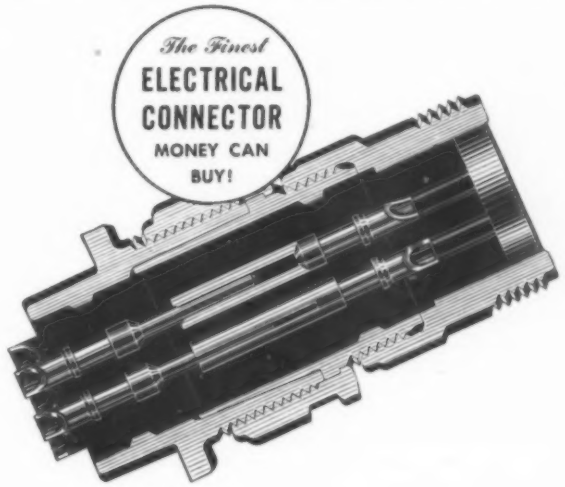

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Interview

with

Frank W. Godsey, Jr.

General Manager

Air Arm Division

Westinghouse Electric Corp.

A Look At Electronic Complexity

Frank W. Godsey, Jr., as General Manager of the Baltimore divisions of Westinghouse Electric Corporation, is responsible for the X-Ray and Electronic plants as well as the new Air Arm Division but his background and primary interests are mainly in the aviation field.

Holder of a bachelor's degree in electrical engineering from Rice Institute and a master's in the same field from Yale, Godsey joined Westinghouse in October, 1940, at its New Products Division in Pittsburgh after being connected with the Safety Car Heating and Lighting Co., New Haven, Conn., and Sprague Electric Co., North Adams, Mass.

In 1941 he started devoting a good percentage of his time to planning electrical devices for aviation use, including generators, motors, and controls, and to the development of jet engines, which were then starting to come into their own. Westinghouse units under Godsey ultimately developed into an operation concerned with aircraft and missile armament and controls. These aircraft activities were then reorganized as the Airborne Armaments (Air Arm) Division, and in May, 1951, Godsey was told to set up a plant for the new division at Baltimore's Friendship Airport. Godsey, who had become manager of his firm's Special Products Division in 1945, was also designated manager of the three Baltimore divisions in June, 1952.

A native of Beaumont, Tex., Godsey is the Co-author of "Gas Turbines for Aircraft."

Q. Would you comment on the growing complaints against too much complexity in aircraft design?

A. Planes cannot easily be made less complicated because when you remove equipment from aircraft that are designed to do special missions you reduce the capability of those aircraft to carry out these missions. Aircraft could be stripped to no more than the airframe and certain accessory equipment, but they would then have very limited usage.

Q. If this is true, what will be its effect on the new "stripped down" fighters like Lockheed's F-104?

A. It is recognized that these stripped down aircraft have limited capabilities, and would not be able to operate under all-weather conditions, nor would they be able to carry out many missions for which heavier craft must be available.

Q. Pilots returning from Korea have indicated a lack of satisfaction with certain types of aircraft used there, claiming there are too many gadgets which burden the pilot and whose cumulative weight limits fighter performance.

A. General Doolittle pointed out the same facts in a recent speech, but he also said that the reason we have such a heavy superiority over the MiGs is because of operational advantages gained by this same complex equipment.

Q. At that time General Doolittle also indicated that since the Russians were building complicated aircraft, we had no alternative but to keep up with them. Could you give us an idea of the adequacy of Russian equipment?

A. The Russian aircraft design trend is definitely toward more complicated apparatus. If we do not keep ahead of them in these trying times, it will come down to a man to man affair, and since they outnumber us so heavily, that could be disastrous.

Q. Do you feel that someday military aircraft will be less complex than they are now?

A. I wish I could say that fighter aircraft would be smaller and less complicated in the future but that would be reversing a trend already well established. Nonetheless, an attempt will be made at lighter weight fighters and interceptors.

Q. Would subminiaturization and similar attempts to reduce the size of today's equipment be the answer to stripped down fighters?

A. I believe that subminiaturization and simplification of components will in part be the answer to lighter planes, but as we make progress in subminiaturization and simplification of components the military services continue to demand more functions of this new equipment. Consequently planes grow more complex in spite of our attempts to reduce the size of individual components.

Q. Robert Gross, president of Lockheed, has stated that we would have unmanned aircraft as the next step in aircraft development and later aircraft patterned after guided missiles. Do you think unmanned planes could be made less complex than existing fighters?

A. No, what we do in unmanned aircraft is trade the intelligence and reasoning power of the pilot for the limited intelligence and automaticity of the control equipment that must be installed to replace him.

Q. Do you foresee, in the next 10 or 20 years, aircraft totally unmanned, or do you think it will take longer than that?

"... We Do Not Want To Go Through That Again."

A. Ten years appears to be in order, provided that the present level of effort in the technical design is not greatly reduced.

Q. Would you have any comment on the reductions in research and development funds in President Eisenhower's budget?

A. I do not know where the cuts will be made. There is a great deal of money going into research and development which is very worth while, but some is also misdirected. I am not familiar enough with all phases of the program to offer constructive criticism regarding the proposed cuts.

Q. Defense Secretary Wilson has labeled "pure research" boondoggling. Have you any comments?

A. Our company carries on a considerable amount of "pure research" work and by that I do not mean development engineering. We consider that it is worth while from the long-range point of view, with benefits to be gained 20 to 50 years from now. In a large organization that expects to continue operating for an indefinite period, such large expenditures would undoubtedly be justified. There is no question, however, that when unlimited funds are made available some pure research projects are dreamed up that definitely would bear the label of boondoggling.

Q. Doesn't Westinghouse carry on a large amount of company-sponsored research work?

A. Westinghouse has for a long time carried on standard development work in commercial products, and we also, to a limited extent, do some for the military. It seems worth while to us to carry the early developments far enough to show whether or not they are practical before the government is asked to invest substantial sums of money. Most of the engineering effort in our military group is work under direct government contract for development and production of military apparatus, but we do carry on a substantial amount of what we can call military development work that is company financed in the early stages.

Q. How does Westinghouse's privately financed research activity compare with that of comparable companies?

A. We do a great deal more than many organizations in this kind of activity, although there are other financially responsible companies that are large enough to support programs of this nature.

Q. Is it true that the Westinghouse Air Arm Division is primarily a military manufacturing plant with little interest in civil production?

A. Yes, this division was designed as a long-range military plant and we have no plans to convert it to peacetime uses. We have declared ourselves on that particular point a number of times in the past several years. We went through a period of quick mobilization at the start of World War II, and we do not want to go thru that again. We feel there is a place for us and other responsible organizations in a continuing peacetime defense activity. If war comes we would then be in a position to translate our know-how into immediate large-scale production in other plants, whether government owned or privately owned.

Q. Could you give us an idea what percent of its total sales Westinghouse would expect to receive from its defense-producing facilities in a peacetime economy?

A. I would like to know exactly how to answer that question, since some of our defense operations will end with the current defense buildup. However, the number of defense orders booked would vary anywhere from 10 to 30 percent of total sales based on a normal peacetime budget.

Q. What percentage of its sales resulted from sales to the military before World War II?

A. Practically none.

Q. Can you comment on the type of work handled here and plans for expansion of the Air Arm Division?

A. We produce airborne electronic and fire-control equipment at the Air Arm Division. Other types of products may be developed, but the Division is primarily intended for the development and production of components for piloted aircraft, fighters, bombers, guided missiles, etc. We believe that the Air Arm plant is probably of proper size for normal peacetime activities; however, there is adequate land for additional building for long-range expansion.

Q. What is your projected sales volume for 1954 and what employment level does this demand?

A. Expected sales for the Air Arm Division in '54 will be very substantial. We need between three and four thousand people at the Division to handle our contemplated work load.

Q. What is your ratio of engineers to total personnel?

A. Nine hundred and fifty out of 2100 employees are engineers. We expect engineering effort to increase somewhat within the next year or two, but the productive effort should also increase tremendously since the Air Arm is in its infancy, having just moved into this plant in January. We are in the process of building up manufacturing operations in the Division almost from scratch, although as a company we have been in this type of business for sometime. We are just now consolidating scattered operations in the engineering department and large-scale production comes next.

Q. Are any of the Air Arm's products in use in current military aircraft?

A. Our products are in use in both Navy and Air Force planes—the Dougles F3D, the McDonnell F2H, and the Lockheed F-94C have Air Arm-designed equipment. The newness of Air Arm does not, however, mean that we are new to this business. We had scattered groups working on this kind of equipment for many years and it is only recently that we have planned a real consolidation of these activities and brought the companies together in this new Westinghouse-financed plant.

Q. Do you think any of the products in your new plant will have commercial uses?

A. To a very limited extent. Civil aviation could hardly support the relatively expensive equipment that is made for our military aircraft. Airlines operate on established air routes, while military aircraft must often operate over enemy territory with every possible confusing factor thrown in their way. Moreover, the military's navigation and control techniques are entirely different from those of commercial operators. Possibly there will be some commercial requirements for lightweight navigation and anti-collision radar in the near future, but that is one of the few military devices we produce that might be used by the airlines.

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WEST TRENTON, NEW JERSEY

West Coast Talk

By Fred S. Hunter

AS LIVELY A MANAGEMENT as you'll find anywhere is that of Lockheed Air Terminal. Something is going on all the time. It may be a new control tower or a new drug store. Or it may merely be a new coat of paint for a fence. The point is that the activity is continuous. It never stops. It's been that way ever since L. W. Wulfekuhler, secretary of Lockheed Aircraft Corp., added the job of managing the airport to his duties five years ago. He gets fine support from an equally energetic staff; Jack Katenhausen, assistant manager; Dave Simmons, administrative assistant for operations; Jack McQuaide, administrative assistant for finance; and Gordon Stanton, director of public relations. Ever since Lockheed bought it from United Air Lines, the Burbank airport has been in the black. The record is all the more remarkable in view of the fact that Lockheed terminal competes with the Los Angeles International Airport, but is in Burbank. Whoever heard of anyone going into a ticket office in New York, for example, and asking for a ticket to Burbank? Last year the Lockheed airport handled 761,000 passengers. This year it will come close to 1,000,000; might even make it. Lockheed can't become as big an airport as Los Angeles International because of physical limitations, but that won't stop Wulfekuhler and his boys from trying.

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American Airlines hasn't revealed the routes over which it plans to operate its first Douglas DC-7's, but this looks like a hint. The No. 3 plane, which is the first one to be equipped with cabin fittings, has duplicate passenger signs—in Spanish as well as in English.

• •

This can be put down as recording an event of great historical significance, or as another sign of turboprop progress, depending upon your viewpoint. Two Douglas A2D's were in the air at the same time up at Edwards Air Force Base and flew a bit of formation for a movie camera. Engines didn't miss a tick.

• •

Los Angeles chapter of the American Helicopter Society has been activated with Herb Moseley of Hughes Aircraft as president. Being young, ambitious, and loaded with energy, first thing Moseley did was try to sign up the entire helicopter group at the El Toro Marine Air Station. If he succeeds, he'll make the Los Angeles chapter the biggest in the society. Aiding and abetting are the other new officers: Charles Dessin of American Helicopter Co., vice president; Ed Lindaman of the same company, secretary; and Joe Culp of Los Angeles Airways, treasurer.

• •

Add Ed Heinemann, chief of engineers at the El Segundo division at Douglas, to the list of those who don't care for rearward-facing seats. Ed had his first aft-facing ride in a military craft the other day. No like.

FINANCIAL NOTES

Aviation payroll in Los Angeles is approximately $15,000,000 a week. That's a lot of scratch. . . . Navy paid total of $12,000,000 for the **six Douglas El Segundo D-558** research ships (three D-558-1's and three D-558-2's). A bargain. Now, a couple of **fighter prototypes** come to around $15,000,000. . . . Price of the **Aero Commander** now is $66,000. Radio may add another $5,000 to $10,000. Reasonable enough, say buyers who like the airplane because of its **fast cruise**—200 mph—and its ability to get in and out of smaller fields.

Stanley Hardman and Nick Ball feel quite triumphant over **selling DC-7 seats to Delta-C & S.** Latter becomes the first domestic carrier to depart from the Douglas company's package for the DC-6 line by buying luxury-type seats elsewhere. On the other hand, the foreign lines turned to the Hardman seats on the DC-6B. These include Sabena, SAS, KLM, TAI, Alitalia, Philippine Air Lines, Swissair, Canadian Pacific, and Japan Air Lines.

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What's New at AiResearch

Oil Cooler with unique fin design cools faster, weighs less

The new AiResearch finned oil cooler is the most efficient heat-exchange unit that has yet been designed for use where the congealing of lubricants is not a factor. Not only is it simple, lightweight and small, but it can be sized perfectly to meet the specific requirements of any customer.

The quick-cooling action of its *extended-surface* fins reduces oil volume in the cooler—cuts down the wet-weight of the cooler. The free flow of air improves high altitude cooling and minimizes drag in high-speed jets. Low speed helicopters, equipped with the AiResearch finned oil cooler, can operate with smaller fans, thus saving considerable weight and space.

This new cooler is one of hundreds of heat exchangers developed and manufactured by AiResearch during the past decade. Nowhere else is so much experience and data available on heat exchanger problems.

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New USAF Inspection Method Halves Costs

West Coast manufacturers may adopt Air Force's new procedures to save time and money.

By Fred S. Hunter

SUBSTANTIAL SAVINGS in time and man power are being accomplished by the Air Force through a newly developed quality control system which makes use of statistical data to streamline inspection procedures in aircraft plants.

Although less than six months old, the new system, in certain instances, is cutting inspection costs in half for the Western Air Procurement District of the Air Materiel Command.

It is proving so effective that aircraft manufacturers already are considering converting their own quality control procedures to the new Air Force pattern. Several west coast companies are now making studies following presentation of the plan at a recent Aircraft Industries Association meeting in Los Angeles.

The statistical plan is now functioning fully at North American Aviation and at the Boeing Airplane Co. Col. Edward A. Wine, quality control chief for the WEAPD, enthusiastic over its effectiveness, has ordered it for all Air Force quality control offices in the district and expects to have installations completed by Aug. 1 at Douglas Aircraft Co.'s Long Beach division, Lockheed Aircraft Corp., and Consolidated Vultee's Plant No. 2 at San Diego.

100% in Effect

Pilot installation for the major airframe industry was at North American Aviation where the system is now 100% in effect at all 15 of North American's plants from Torrance to Fresno. Results have been little less than spectacular.

When it was operating under the old system of inspecting almost every screw and bolt, the Air Force had estimated that today's production volume at North American would require approximately 160 inspectors. With the new system it is doing the job with 52.

"We have seven inspectors covering the main factory area in Los Angeles where we had 17 a year ago," said Merle Bouse, plant chief inspector for the Air Force at North American. "At locations like the Crenshaw facility, where we formally had a full-time inspector on the job five days a week, we now normally have an inspector there only one day a week."

This saving in time and taxpayers' money is derived from a record-of-experience formula worked out to govern inspection frequency rates. In other words, a sort of super "squawk" sheet setup has been established which points out weak spots where inspections should be tightened up and trouble-free spots where they may be reduced.

In actual practice, of course, it isn't quite that simple. It isn't that inspection is relaxed or that the Quality Control Guide established by the Air Materiel Command is in any way sidetracked. It is more that the quality control pattern is reduced to essentials and the lost motion of superfluous inspection eliminated through a completely planned operation as contrasted with the old

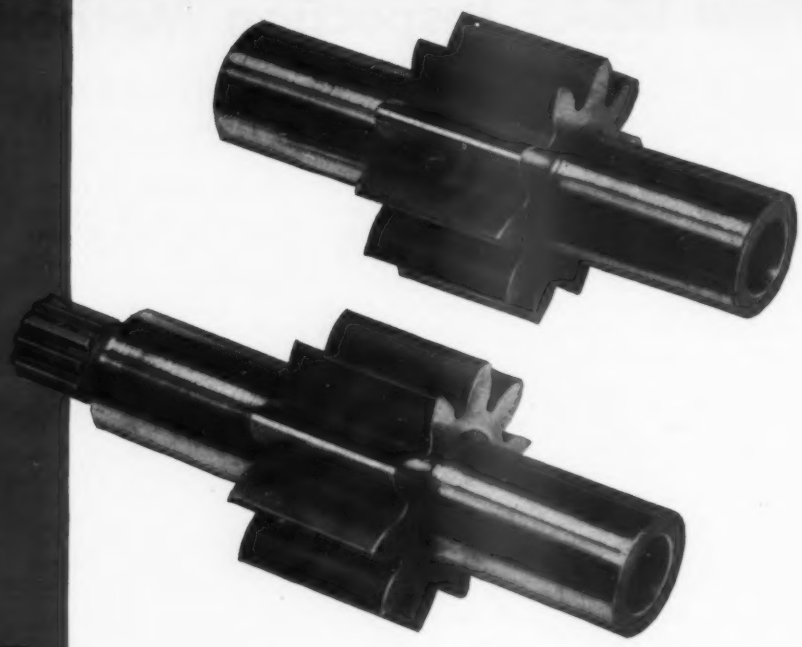
How USAF Establishes Inspection Frequencies

Function	Deficiency Limits In Percent	Proposed Surveillance Frequency Level I	Level II	Level III	Quality Rating
Procedure Review	0 — 2.5	Semi-monthly	Monthly	Bi-monthly	Adeq.
1. Fabrication and Assembly	2.6 — 4.0	Weekly	Semi-monthly	Monthly	Marg.
2. Receiving Area Control	4.1 —	Semi-weekly	Weekly	Semi-monthly	Inadeq.
Product Inspection	0 — 1.0	Weekly	Semi-monthly	Monthly	Adeq.
1. Fabrication and Assembly	1.1 — 2.5	Semi-weekly	Weekly	Semi-monthly	Marg.
2. Receiving	2.6 — 4.0	Daily	Semi-weekly	Weekly	Marg.
	4.1 —	Semi-daily	Daily	Semi-weekly	Inadeq.
Special Systems					
1. Material Handling and Housekeeping	0 — 4.0	Semi-monthly	Monthly	Bi-monthly	Adeq.
2. Material Control	4.1 — 6.5	Weekly	Semi-monthly	Monthly	Marg.
3. Drawing & Change Control	6.6 —	Daily	Weekly	Semi-monthly	Inadeq.
4. GFAE	0 — 2.5	Semi-weekly	Weekly	Semi-monthly	Adeq.
5. Shipping (Pres., Packing DD-250)	2.6 — 4.0	Daily	Semi-weekly	Weekly	Marg.
6. Material Review	4.1 —	Semi-daily	Daily	Semi-weekly	Inadeq.
7. Tool and Gage Control	0 — 2.5	Semi-monthly	Monthly	Bi-monthly	Adeq.
8. Material and Processes	2.6 — 4.0	Weekly	Semi-monthly	Monthly	Marg.
	4.1 —	Semi-weekly	Weekly	Semi-monthly	Inadeq.

Adeq. = Adequate
Marg. = Marginal
Inadeq. = Inadequate

Inspection Levels	I	II	III
	1. Semi-daily	1. Daily	1. Semi-weekly
	2. Daily	2. Semi-weekly	2. Weekly
	3. Semi-weekly	3. Weekly	3. Semi-monthly
	4. Weekly	4. Semi-monthly	4. Monthly
	5. Semi-monthly	5. Monthly	5. Bi-monthly

A TYPICAL MASTER CHART worked out by Merle Bouse, Air Force inspector-in-charge at North American Aviation in Los Angeles, to put into effect the first installation of the Air Force's new quality control system in a major aircraft manufacturing plant. The deficiency limit percentages shown here are illustrative, but not necessarily the percentages in effect at North American. Percentages of defects are calculated over four-week averages.



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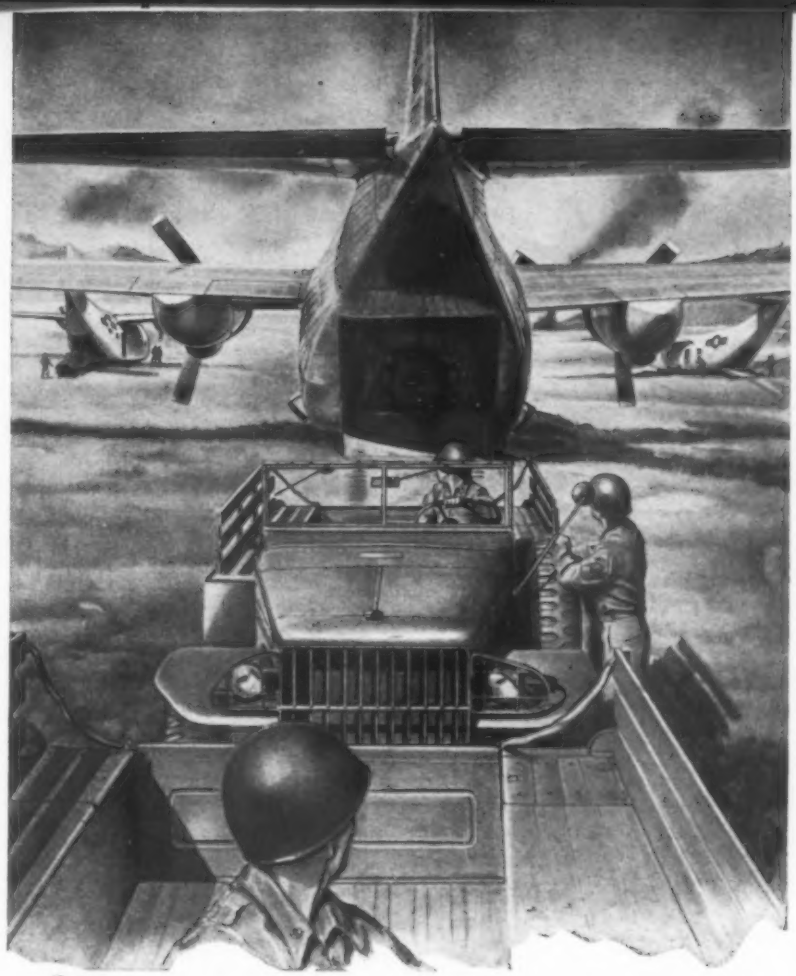

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method of leaving much to individual judgment.

The planning starts with a cooperative analytical study in which representatives of the contractor's engineering staff and the contractor's quality control department join with the Air Force quality control staff in determining how various defects are to be classified. Separate committees are set up for the different parts and assemblies in this program of evaluating the relative importance of deficiencies. From this beginning, the program of quality control becomes one of systematic analysis of the record to measure the character and extent of future inspections.

Three levels of inspection are arrived at. These may be called 1, 2 and 3, or translated into normal, loose and tight. If the frequency of "squawks" is below a pre-determined figure at a particular inspection station, the Air Force surveillance at this point may be reduced. If the "squawks" increase, the inspection frequency is promptly upped.

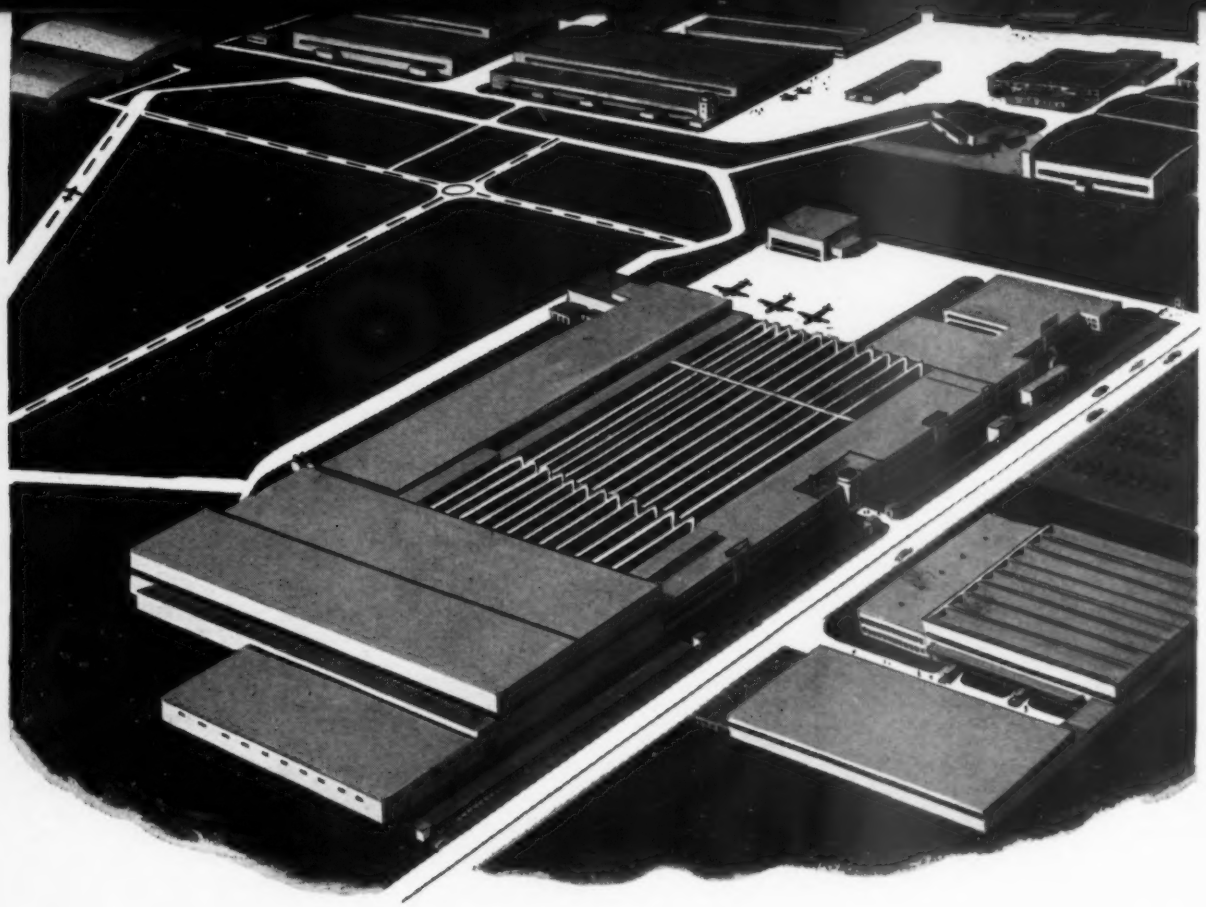
For physical operation, the factory is mapped into areas and stations. Breakdown at North American includes 69 areas and 172 stations. A manual, which includes full instructions for the inspectors, guide lists and report forms, is prepared for each station. Inspectors enter on the AF forms any defects they may find. These become the basis for the analysis determining quality ratings and future inspections.

Currently, Air Force inspection on the F-86F, shop completed, is on a 10% basis. Chief Inspector Bouse sees no reason why this cannot be reduced to 5%. Reductions of this kind not only mean direct savings in man-hours to the Air Force, but bring indirect savings in less production time loss to contractors.

Introduction of the new system also enabled Bouse to work out a plan to circumvent inspector prejudices by putting day-to-day selection of parts or assemblies to be inspected on a entirely irregular basis.

It should be pointed out here that there is a critical list of 15 inspections that are mandatory. No latitude is permitted in these inspections.

The idea to put statistical data to work in simplifying quality control originated with the Air Force at the General Electric jet engine plant in Lynn, Mass. First complete installation in any major aircraft manufacturing plant was at North American and the Western Air Procurement District's control evaluation survey team became the first in the country to accomplish an evaluation of the plan in full operation. Eventually it is expected that the new system will affect more than 6,000 industrial enterprises doing business with the Air Force. • • •



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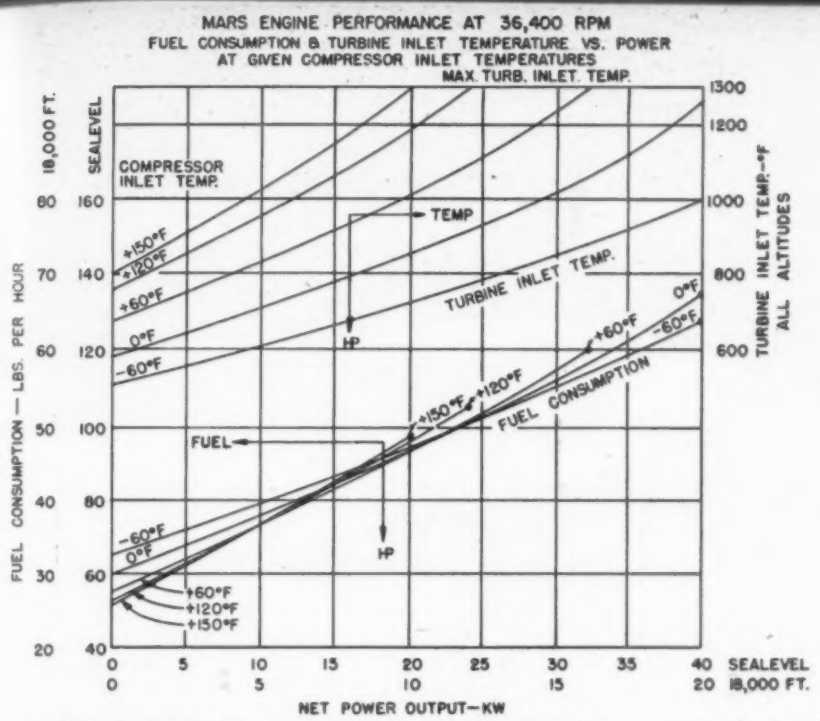

PROOF OF THE MARS performance is shown here where fuel consumption is plotted against altitude and turbine temperatures.

Production Planned for 50 HP Turbine

Solar's Mars engine will see military service as accessory power drive; other applications studied.

SOLAR AIRCRAFT CO. of San Diego, is now in the process of tooling for mass production of a new and versatile gas turbine engine, said to be the smallest yet developed. The Solar Mars engine, as it is called, has been ordered by the U.S. Air Force, the Douglas Aircraft Co., and the U.S. Navy. It stands to see wide service as a prime power drive for:

- An airborne auxiliary and emergency electrical power study for the Douglas C-124 Globemaster.
- A portable emergency fire pumping unit that can be started by hand, and will deliver up to 500 gallons of water per minute at a line pressure of 100 pounds per square inch.

The new Solar engine is an outgrowth of a USAF development contract awarded the company immediately following World War II. The Mars engine uses a centrifugal-type compressor impeller and a radial inward-flow turbine rotor. These are mounted back to back on the same shaft and separated by a seal plate.

Air entering the engine through a screened opening to the compressor is supercharged and then directed into a combustor section where fuel is injected and ignited. Combustion gases then flow to the turbine scroll and nozzle, moving radially inward to drive the turbine rotor vanes before being exhausted axially through a short tailpipe.

Turbine cooling is provided by a shroud built around the turbine scroll, with a portion of the compressor discharge air being bled off to circulate through the shroud. Filtered fuel is supplied to a fuel pump, then through a governor to the spray nozzle in the combustor section. Starting ignition is furnished by a spark plug and booster coil arrangement.

SOLAR'S MARS turbine engine, rated at 50 hp, will soon use USAF and Navy service.

Solar is producing two versions of the airborne generating unit powered by the Mars and both have been fully qualified under a 200-hour endurance test run. In these trials the engine demonstrated its ability to start and operate at temperatures from —65° F. to 130° F. and at altitudes up to 20,000 feet.

In the Air Force's C-124, for which generators have been ordered, auxiliary power is supplied during ground operation for a cargo hoist and cargo door actuation.

One version of the airborne generator set is a combination ac-dc unit, and another a straight dc generating unit. Both are rated at 14 kilowatt power output. A combined ac-dc unit, the model T-41M-1, includes a fully automatic control system for acceleration and operation of the generator from start to stop.

Basic specifications of the Solar Mars engine include:

Weight incl. accessories	115 pounds
Power Rating	50 hp*
Pressure Ratio	2.2 to 1
Airflow	2.2 lb./sec.
Rated Turbine speed	36,400 rpm
Speed variation	±5%
Exhaust gas temp.	900° F.*
Oil Capacity	5 qts.
Oil Consumption	.04 lb./hr.
Rated Turbine speed	36,400 rpm

*Approximately.

This model uses the dc generator also wired as a starter to energize and accelerate the turbine up to a speed of about 5,000 rpm. At this speed a fuel pressure switch automatically actuates an ignition unit and momentary ignition brings the turbine into operation under its own power. The starter continues to assist the turbine in acceleration up to a speed of about 16,000 rpm, at which point it is automatically disconnected and the engine continues to accelerate under its own power to its operating speed of about 36,400 rpm. The full starting cycle is completed in less than 10 seconds, according to Solar.

Although the biggest production orders received by Solar for the new engine have come from the U.S. Navy for a portable shipboard pumping unit, completed development of the airborne generator sets points up its potential as a power source in many other aviation and industrial applications.

Only limitations seen by Solar are in areas where continuous service or low fuel consumption are a must. The Mars engine is not designed for continuous operating duty, and characteristic of all turbine engines, its fuel consumption is relatively high (see chart). • • •

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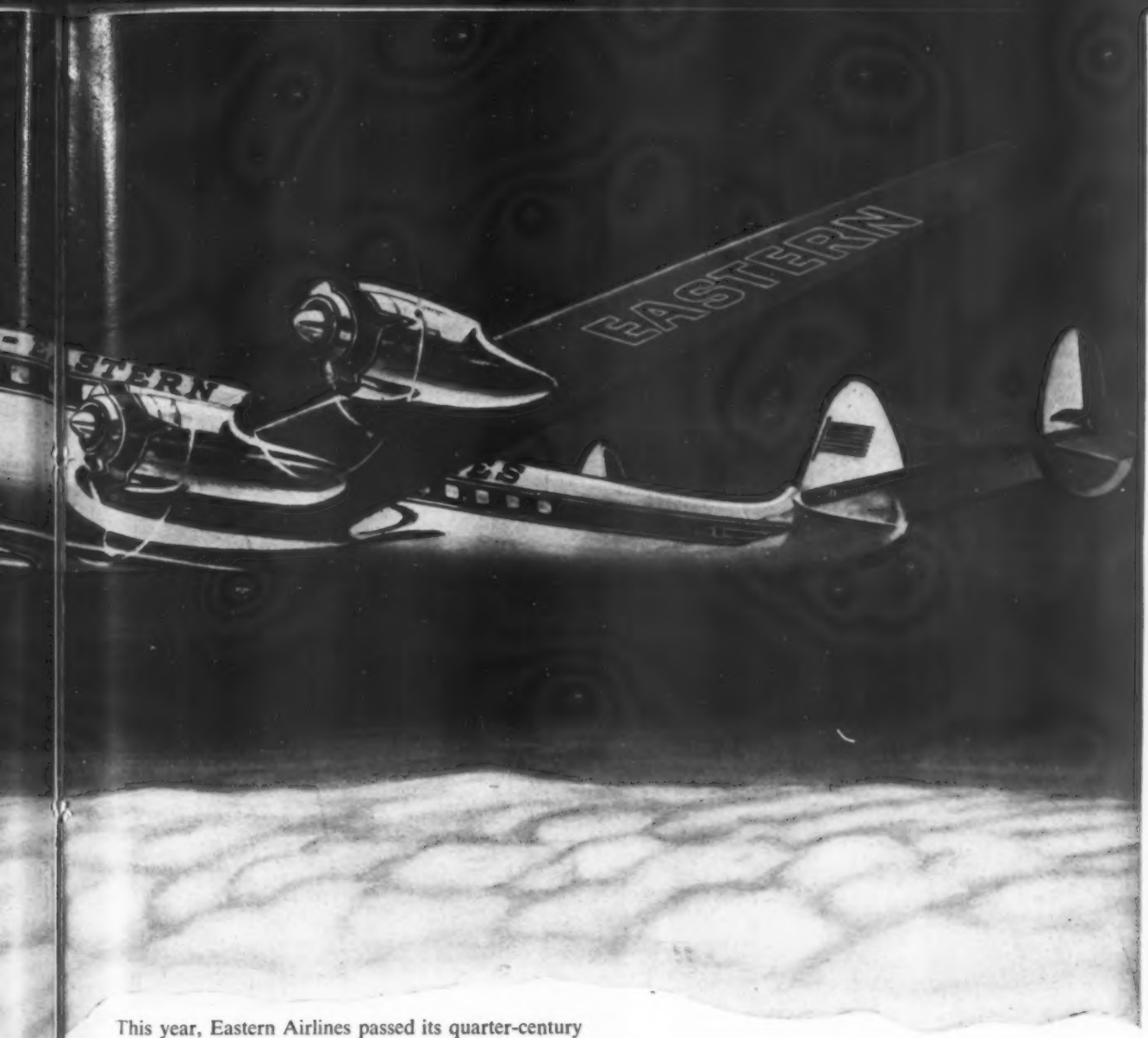

This year, Eastern Airlines passed its quarter-century mark of steadily-expanding service. Last year, for example, the Great Silver Fleet transported some 4 million passengers and averaged 170,000 miles a day over its network of air highways.

One important reason for Eastern's position in the Aviation industry is the fact that they test – *and select the finest products available*. Sinclair is proud that this year, again, Eastern has chosen to use Sinclair Aircraft Oil exclusively. *Today, more than 45% of the oil used by major scheduled airlines in the U. S. is supplied by Sinclair*. Why don't you place your confidence in Sinclair Aircraft Oil?

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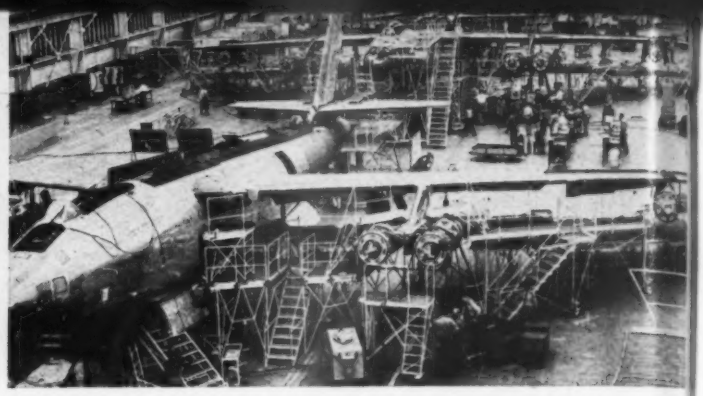
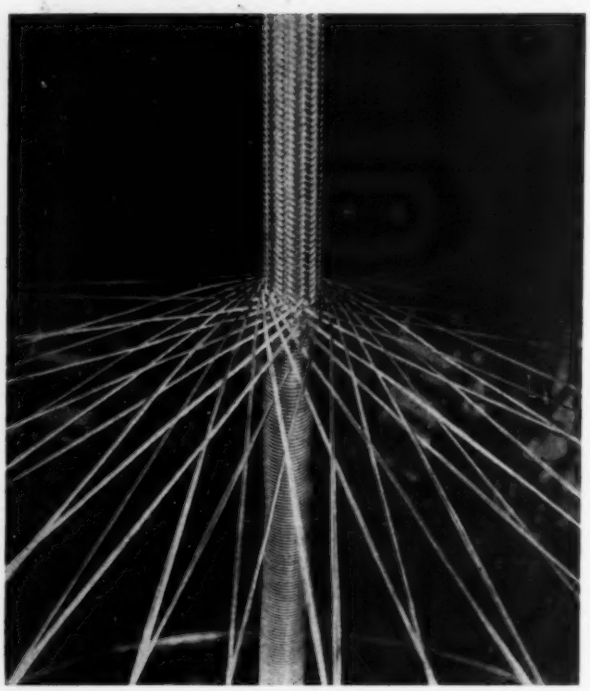
Then —scene at Lockheed Marietta plant two years ago, when it was a surplus machine tool warehouse, contrasts sharply with . . .



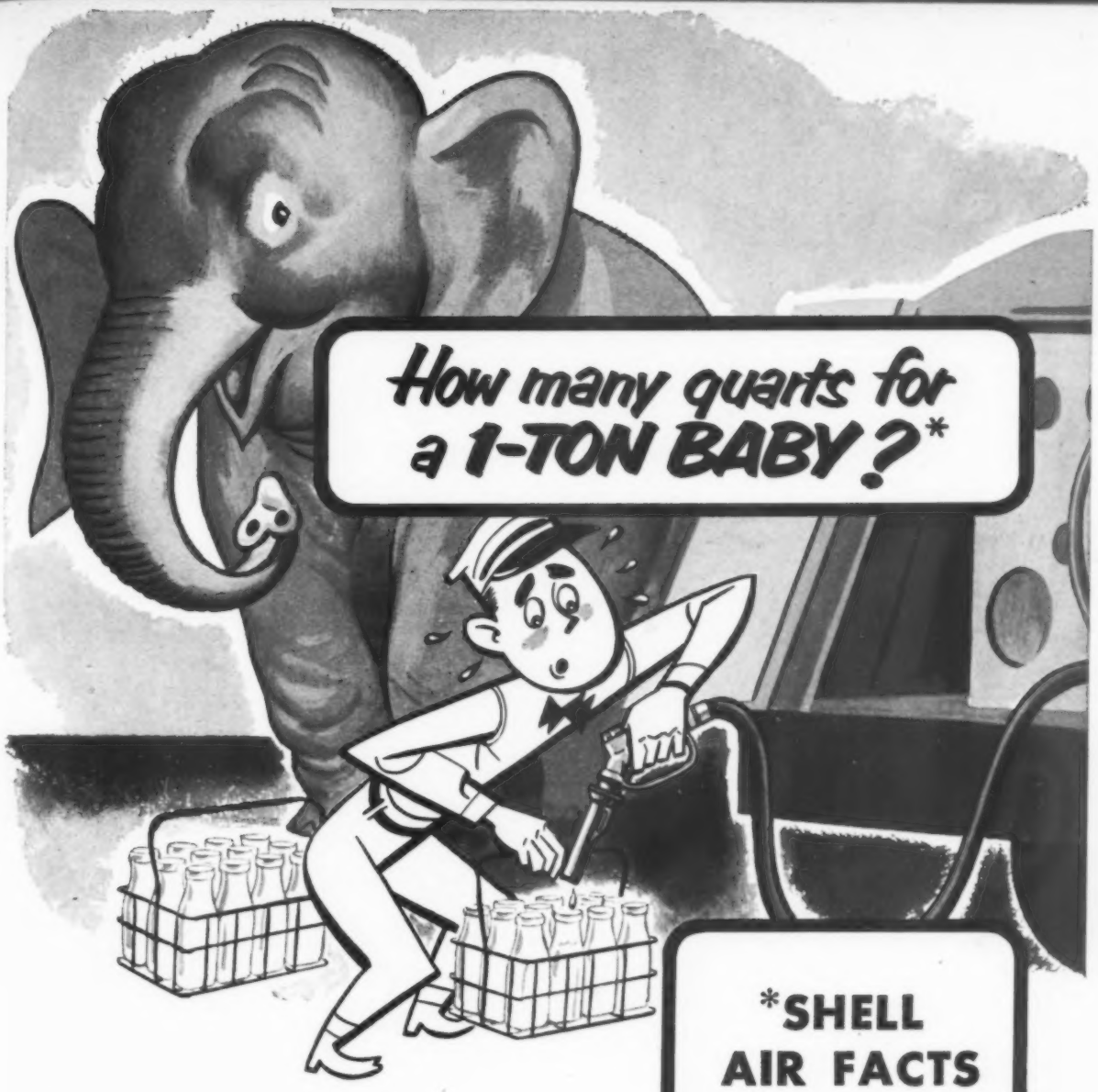
Now—it is symbolic of the aircraft industry's ability to get production rolling. It's Lockheed Aircraft Corp's. Boeing B-47 final assembly at Marietta, Ga.



Industrial Maypole is the title given this unusual photo showing a closeup view of the metal braid being applied to the innercore of a Titeflex flexible metal hose. Between 16-48 braid carriers on the machine, depending on hose size, each feeds from one to eight strands of silicon-bronze, nickel, stainless steel or copper clad steel into the braid.

Production Lines

Skin-stringer panel of a Convair 340 moves through a General Drivematic machine at Convair's San Diego division. The special machine drills holes and rivets by means of a hydraulic-driven pinion gear and rack arrangement. A combination of photo-electric sensing eye and template assure proper hole alignment.



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Extra Section

By William D. Perreault

ONE OF THE MANY POINTS about military practices to get a fine raking over during the recent budget hearings was the matter of "first line" and "second line" aircraft, a dividing line which is often used to justify new aircraft procurement. It seems the U. S. Air Force is using three years as the basic age limit for "first line" fighter aircraft and six years for bombers. Beyond that, except in special cases, the aircraft is considered a "second line" aircraft.

•

Over 80% of the so-called "facilities" funds appropriated for Air Force use since the start of the Korean War have gone into machine tools and related equipment, rather than into factory buildings and similar items, according to the USAF. In the expansion which pushed monthly airframe production from 3 million pounds in the pre-Korea period toward 11¾ million pounds now, about 137,000 major items of machine tools were acquired over the three-year period. About 10,000 more machine tools are still required.

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At Sheppard Air Force Base in Wichita Falls, Tex., where there are some 16,000 mechanics in basic training at all times, the U. S. Air Force is constantly trying to drive home the importance and the cost of good tools. Every single item of hand tools and testing and ground handling equipment is labeled with its price. The USAF claims it helps.

•

Relatively high cost of training in the military services, which all of us recognize but few appreciate, is largely due to high turnover rates. The U. S. Air Force claims that annual turnover rate of "key work force personnel" is 18%, in 1954 it will lose 123,000 men with four years military service, and in 1955 the number will be 174,000. This means number lost annually is equivalent to airman manning of 21 first-rate wings.

•

Everyone in the aviation business has a few friends in the Air National Guard but few know the size or scope of its activities. The Budget hearings disclosed that the average pilot strength of the ANG in fiscal 1954 will be 2,009 pilots flying some 1376 aircraft about 221,448 aircraft flying hours. It provides 44,258 aviation personnel, including 5,128 officers, with inactive duty training periods.

•

Looking at the Air Force figures for fuel leakage, spoilage and evaporation, it would appear that considerable effort could be profitably spent to reduce this type loss. The USAF is using a shrinkage factor of 3.04% for fuel and 3.57% for lubricants. Actually much of the lubricant "shrinkage" represents the oil film left on oil drum walls, servicing containers, etc. Nonetheless, with a projected $412,306,724 fuel bill for fiscal 1954, the stakes would seem high.

•

Miscellany

About 14% of USAF training activity is in training foreign pilots and technicians. . . . For every 100 new planes the USAF buys, **the equivalent of 47 planes,** dollarwise, is spent on spare parts. . . . It takes **120 days time,** including shipment to and from the depots, for overhaul of Air Force engines. . . . General Twining claims an engine change on a Boeing B-47 **takes about one-tenth the time** required for a large piston engine transport. . . . **Ratio of officers** to enlisted men in the USAF provided by the new budget would be about 12.9%. . . . About **85% of today's USAF pilots** are veterans of World War II. . . . **Average age of** Air Force aces in MiG Alley: 32. . . . USAF has ordered **UHF airborne direction finding** equipment, through the Navy, at a unit cost of about $700.

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N1522V, mfgrs. serial 48430. All fabric surfaces freshly recovered. Engines and accessories with low time since overhaul. 1842 hours total time, 344 since Navy overhaul on airframe, engines and propellers. Has A3A autopilot, thermal deicing, military interior. Aircraft will be checked and serviced for ferry flight. Flyaway Linden, N. J.

N4855V, mfgrs. serial 46477. Has thermal deicing, Sperry Mk. III autopilot, standard military interior. 2409 total hours, 616 since Navy overhaul on airframe, engines and propellers. Flyaway Burbank, Cal.

Price of either of these two planes is **$25,000**

Can also offer a choice of several Catalinas purchased by us from Royal Canadian Air Force surplus. Because of their low price they are an ideal buy for operators who desire to hold down costs by performing the overhaul and interior conversion themselves. Price "as is", flyaway St. Johns, P. Q. Canada **$15,000**

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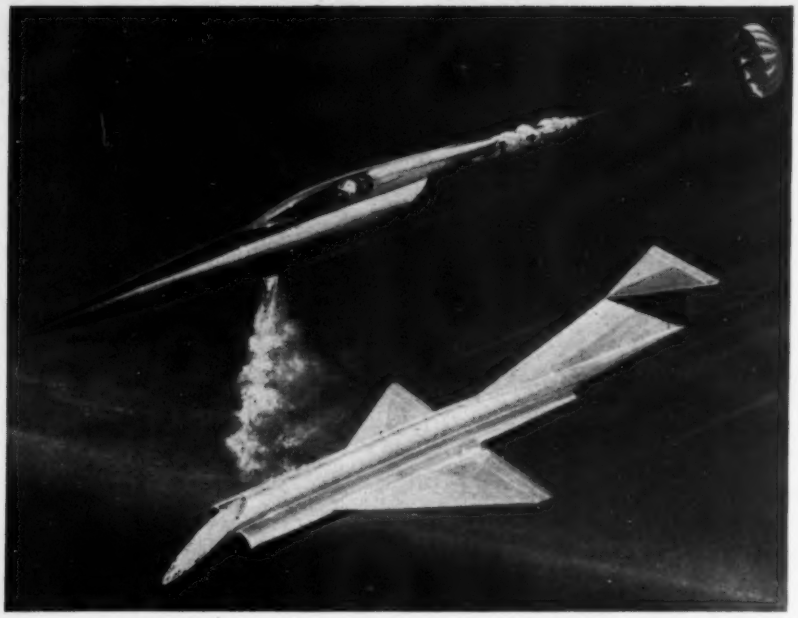

ESCAPE AT 2,000 MILES PER hour is not easy for the pilot but this Douglas proposed capsule cockpit, JATO actuated in an emergency and assisted to a gentle landing by parachute, should make it possible.

Designing the Cockpit to the Man

Mayo elaborates on problems of high speed flight as they affect the pilot and aircraft designer.

This is the second and final part of a paper titled "Engineering the Cockpit to the Man" prepared by A. M. Mayo of Douglas Aircraft Co. and presented at a recent symposium on "Frontiers of Man-Controlled Flight" under the auspices of the University of California and The Institute of the Aeronautical Sciences.

CONTROL OF THE PILOT'S immediate atmospheric environment from the standpoint of pressure and composition becomes increasingly difficult as a function of both altitude and length of time of flight.

Up to altitudes of approximately 70,000 feet the problems of pressurization and composition can be taken care of relatively easily by compressing atmospheric air. Above altitudes of 70,000 feet supplying the power required to compress the air from ambient to cockpit pressure and handling the high temperatures resulting from extreme pressure ratios becomes very difficult.

There is also the question of contamination of the atmosphere by the relatively high concentration of ozone at certain high altitudes.

For high altitude flight of very short duration the problem of air conditioning resolves itself into one of a simple storage pressure system, such as liquid oxygen. For this short period the removal of contaminating gases such as carbon dioxide, water vapor, and excreted body gases will be unnecessary.

For the longer flights the providing of self-contained pressurizing and air purification systems presents a difficult problem. Much work has been done toward the solution of the difficulties in maintaining an enclosed inhabitable atmosphere by people working with submarines, and many of the solutions should be applicable to aircraft with little or no modification.

When the ambient atmospheric pressure becomes negligible compared to the cockpit pressure, the loss of cabin pressure—either explosively or slowly over an extended period of time—presents a very serious problem.

Until the cockpit structure and the pressurizing system can be made as reliable as the basic structural components of the airplane, it will be necessary to provide some sort of safety equipment for the pilot. This equipment may well be a pressure suit designed to be as light and comfortable as possible for the normal unpressurized condition, the design philosophy being that it is in the same category as a parachute and is used only for an emergency in which most pilots may not be involved during their entire flying career.

For the commercial transport flying at altitudes which will not permit the pilot to dive to a safe altitude before the effects of sudden decompression become serious, the safety of the passengers rests largely in the hands of the engineer charged with the job of making the pressurizing system and cabin structures as reliable as a wing or other basic structural members.

• **Noise and vibration:** It is a fortunate coincidence that the airplane noise and vibration problem, which has consistently been growing as speeds increase, takes a turn for the better as the speed of sound is passed. Pilots uniformly report a dramatic lessening of external aerodynamic noise and an increasing awareness of structural and mechanical noises at speeds greater than that of sound.

At very high speeds at moderate altitude, it is possible that structural vibration and attendant noise will become a troublesome problem. At the very high altitudes the primary source of noise and structural vibration will probably be high-powered equipment within the aircraft.

Another aspect of high performance jet and rocket type airplanes is the physiological danger to ground crews working in the vicinity. While it is known that this danger does exist, it presents more of an operational and sociological problem than a technological one.

Supersonic "Bangs"

For example, it will probably be some time before the sociological educational requirements and the technological advances will satisfy people near airports where jet aircraft are operating and in areas subject to supersonic "bangs." More data and work are needed on this problem, but there seems to be little reason to believe that the advances in aviation will be affected by it.

In order that the engineer be readily provided with applicable data, it is suggested that information on vibration and sound be presented in simplified chart form.

• **Radiation:** Very much information is in being or forthcoming from the biologist concerning the effects of varied doses of different radiations on many biological tissues. The physicists are gathering more and better information on the characteristics and concentrations of these radiations.

In spite of all of this information there still appears to be a shortage of clear cut answers as to the effects versus time on human subjects of the actual concentrations at high altitudes, either

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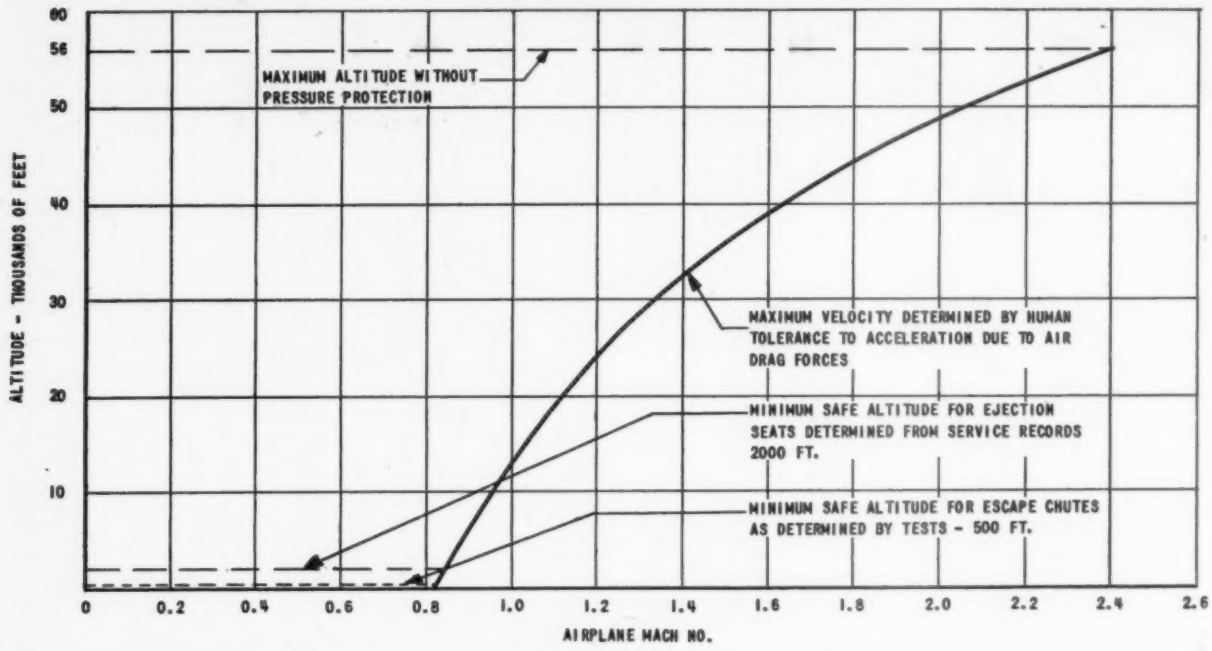


within or outside the atmosphere. While much opinion on this subject is at present optimistic, no promising methods of shielding or deflection have yet been publicized to cover the eventuality of a serious problem.

• **Meteorites:** Meteorite collision becomes a subject for study as aircraft approach the outer surface of the highly protective cover of the earth's atmosphere.

The graphs shown here indicate the thickness of plate which would be required to stop meteorites of various diameters and the probability of being struck by a meteor of damaging size. It can be seen that an aircraft having a 1/10″ thick skin and 1000 square feet of area projected normally to the earth might fly for approximately 100 years before being penetrated by a meteorite.

While this information is plotted from theoretical calculations by Grimminger based on rather meager data and takes into account only average meteorite concentrations, it seems to indicate that a statistical approach may reduce the problem to one of probability roughly equivalent to that of being struck by lightning, or at worst that of becoming violently involved in California's traffic problem.

Even these slight chances can be greatly lessened by engineering the structure to take into account the energy dissipation possibilities inherent in the high ratio of kinetic energy to momentum in most meteoric particles.

• **Escape:** Before discussing types of escape provisions, it might be well to review the objective of escape under emergency conditions.

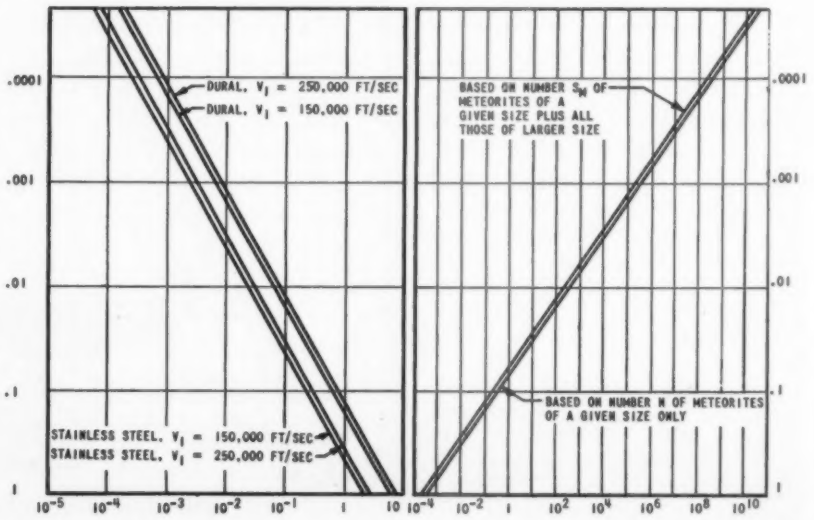
Unfortunately safety has no absolute value and complete safety cannot be achieved even in the most carefully regulated daily living. It is possible, however, to reduce risk by ever smaller margins by expending more and more energy in that direction. It should be obvious that a point of diminishing returns is eventually reached where increases in safety are not worth the effort required to effect them, and also that effort may be expended on one phase of a safety problem at the expense of other and perhaps more rewarding ones.

These principles apply equally well to decisions regarding emergency escape systems for aircraft. Once the needs and performance of a particular craft have been determined an escape system should be selected on the basis of an objective overall study of the applicable conditions rather than on generalizations. All available pertinent statistics should be critically analysed and the conclusions vigorously applied.

In analysing the aircraft emergency escape problem, three considerations appear to be fundamental. Of these three, two are very difficult to evaluate. The third can be objectively estimated.

One consideration is the moral factor, which is a part of the American ideology in evaluating one man's life against that of another. Secondly, the

SOME DAY meteorites will be a problem.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DURAL, V_1 = 250,000 FT/SEC
DURAL, V_1 = 150,000 FT/SEC
STAINLESS STEEL, V_1 = 150,000 FT/SEC
STAINLESS STEEL, V_1 = 250,000 FT/SEC
10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 1 10
BASED ON NUMBER S_M OF METEORITES OF A GIVEN SIZE PLUS ALL THOSE OF LARGER SIZE
BASED ON NUMBER N OF METEORITES OF A GIVEN SIZE ONLY
10^{-6} 10^{-2} 1 10^{2} 10^{4} 10^{6} 10^{8} 10^{10}

morale factor is a military consideration, affecting the will to perform of individuals and groups. The third factor is economic and is a balancing of the man life-times of effort required to install an emergency system against the return dividend in number of lives saved.

Having established the general objectives of the escape system, studies of specific requirements are in order. These requirements are of two types: One set of requirements concerns environmental control and increases progressively in importance as altitude increases. The environmental requirements of pressure and temperature must be considered at the time of bailout, and the severe climatic environment into which the escapee may descend, whether water or land, must be taken into consideration.

Force Control

The second set of conditions concerns force control as a function of directional acceleration and time. At low speeds these conditions present no great problem. At higher speeds, however, the acceleration forces resulting from air drag on a rapidly moving human body will limit the conditions under which a man can escape without protection from these forces.

Much information is available and more is being gradually added regarding unidirectional acceleration forces as a function of time. The same is unfortunately not true of acceleration forces of varying direction and intensity and there is heated controversy regarding the need for and methods of evaluating and controlling this type force.

As an example, the difficulty of performing a given function, such as actuation of a control, under steady state acceleration may have little or no relation to the difficulty of performing the same function in a field of acceleration changing in direction and magnitude. Improper evaluation of such items can lead to ineffective design and excessive complication. It is for this reason that a realistic, statistical survey should be made in considering the escape problem.

A number of escape methods have been developed, some of which have been operationally proven in production aircraft and some of which have not proceeded beyond the research stage.

The most common type of escape is over-the-side bailout and no discussion is necessary except to say that it is probably the lightest and simplest method for low speed airplanes. The ejection seat is a well developed and widely accepted method of escape acceptable for speeds up to approximately Mach 1.0.

It is believed that a properly designed escape chute may be considered approximately equivalent to the ejection

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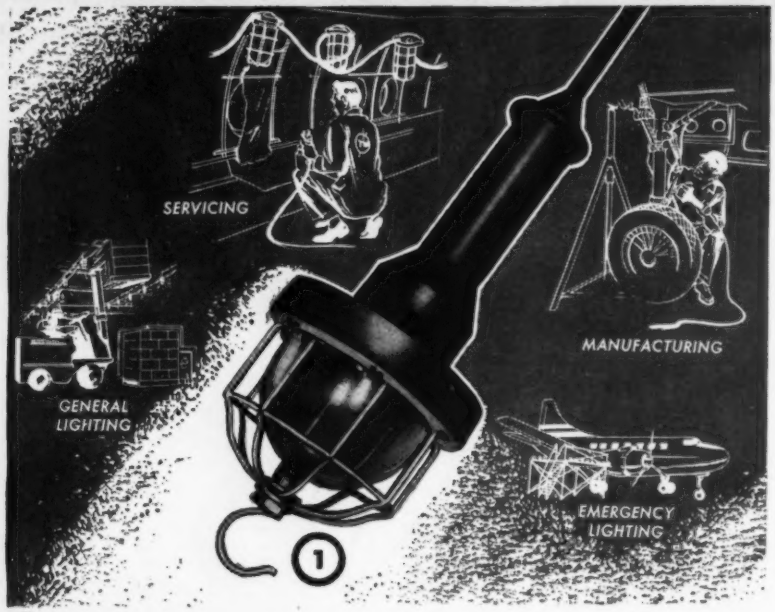

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seat in performance, although sufficient service experience has not been accumulated to establish this as a definite fact, and argument on this point is still rather heated.

The upper limit of safe speed for the ejection seat is indicated by the graph on page 50. This curve probably also can be used to approximate the safe limits for a well designed escape chute. Since some slow down prior to escape will normally occur, it is believed that either escape method would be satisfactory for airplanes having a top speed of Mach 1.0 at sea level.

An escape method which has less utility than was originally anticipated is the dropable nose section in which the nose section containing the cockpit is released from the body of the airplane and allowed to fall free under gravity and aerodynamic forces. The weakness of the method is the high rotational acceleration forces imposed on the pilot at the moment of separation.

A similar method which appears to have good potentialities for both high speed and high altitude service is the escape capsule. Such a capsule may be a separate cockpit unit fitted into the airplane or a section of the airplane separated in a manner to keep it aerodynamically stable.

In multi-stage vehicles for extreme altitude flights, it seems reasonable to suppose that the last stage minus its fuel could be designed as the escape unit.

Escape System

It appears that most of the present escape systems will continue to have a place in the aircraft field. Helicopters and other slow speed aircraft will no doubt use the simple slow speed systems. Other aircraft will use the system best adapted to the characteristics of the particular application.

It should be emphasized that no system will be applicable to all aircraft, and it is therefore essential that arbitrary opinions do not supplant objective analysis. It is very important that the designer be extremely critical of escape systems which materially increase the overall dimensions of the airplane or add large amounts of dead weight. Incorrect decisions in this respect can reduce individual and overall safety by reducing performance and the number of available aircraft.

• **The weight problem:** As with every other component of an airplane, the cockpit, in addition to being adequate from the physiological and psychological aspects of the man, must be designed to minimize weight. Excessive

weight and complexity in any air or space craft can defeat the entire purpose for which the design was conceived.

There is also a strong economic incentive to reduce weight when it is realized that current prototype military airplanes cost in round figures $500.00 per pound and production airplanes cost roughly 1/10 as much, based on overall weight.

A pound of unnecessary weight, however, is in itself only a very small part of the picture. For every added pound of dead weight an additional four to 15 pounds in fuel, engine, structure, and equipment must be added to keep the performance constant. If performance is not to suffer, then, and greatly reduced performance can be disasterous, one pound of unnecessary equipment or structure for the man represents a waste in the order of magnitude of 10 pounds, or $5000.00 for each prototype and $500.00 for each production airplane.

The growth factor of 10 is used as a probable average for current high performance airplanes. This cost trend is due largely to the greater complexity and higher speeds. On a single 1000-airplane contract, one additional pound of weight can represent the entire life-time output of several men.

In order to achieve the best overall progress, it is essential that efficient use be made of the best and latest engineering and aeromedical information in arriving at the proper compromises so vital to progress in the field of aviation. Consequently, on a fundamental basis, it is imperative that scientists, engineers and medical people increasingly pool their knowledge and ideas toward the realization of these common goals.

It is gratifying to note that in aviation more and more of this combination of scientific endeavor is being realized.

• • •

Low Cost Air Mail Will Get Early Test

Experiments in carrying first-class mail by air between New York and Chicago will start within 60 days, Postmaster General Arthur Summerfield said.

"The airlines for all too long have had no encouragement from Washington," he stated. "This will be changed."

Although Post Office and airlines have been working on plans for experiments with first-class mail, Summerfield's statement, naming New York-Chicago and setting the starting time within 60 days, came as a surprise to the industry and to some PO officials. Proposed rates of pay for the carriers and operational plans have not yet been put in final form.

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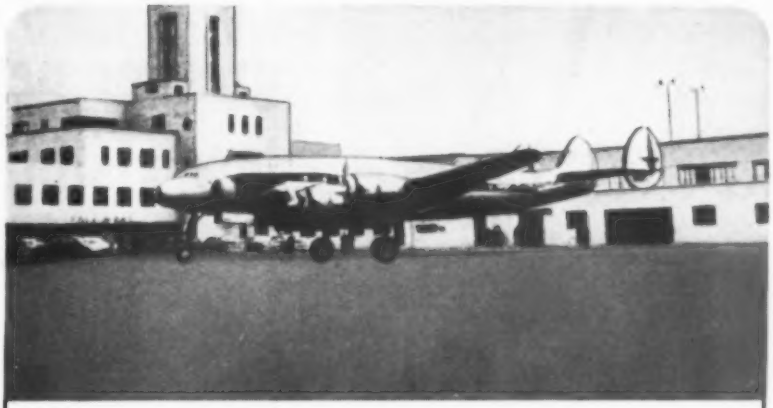

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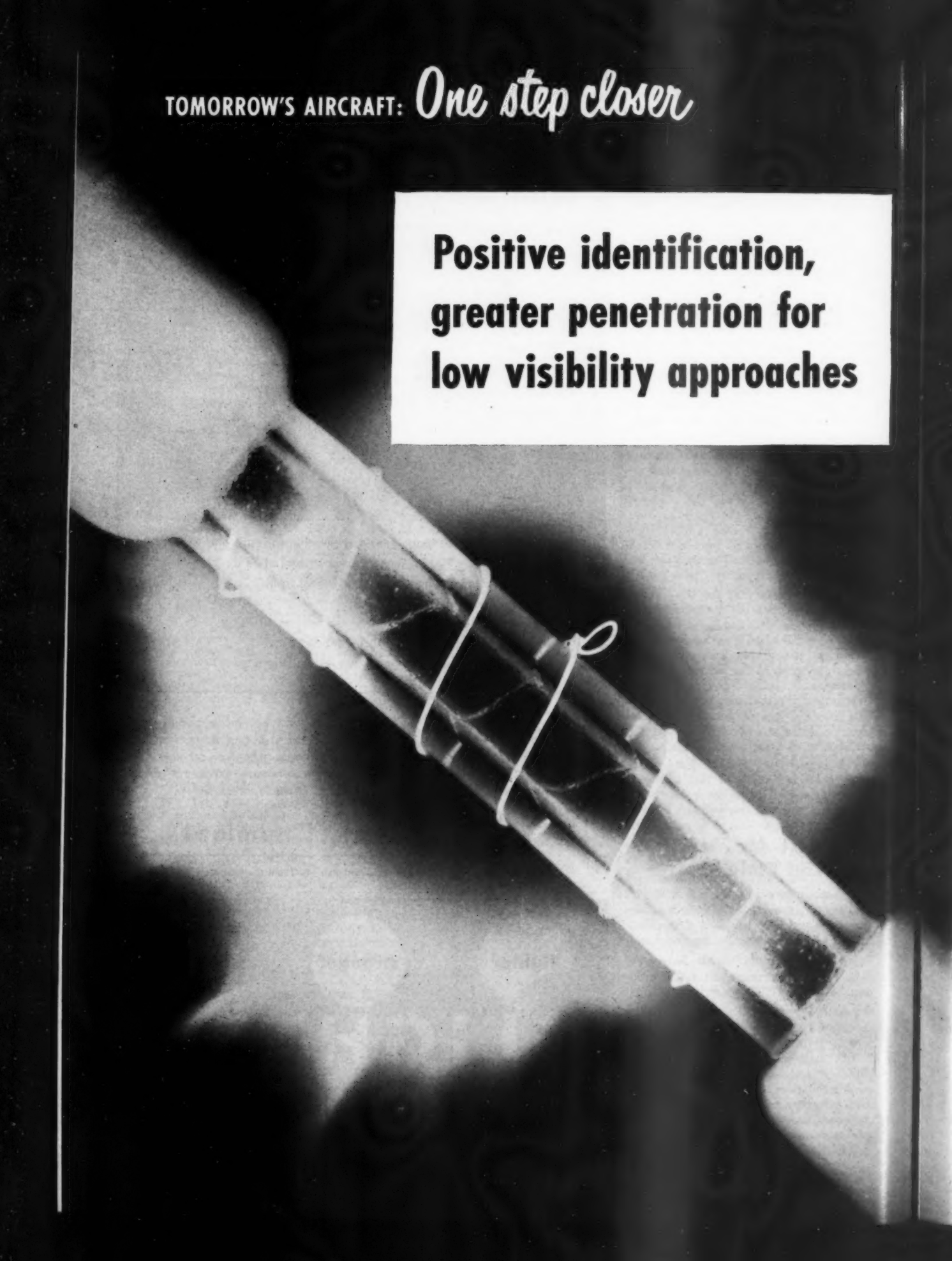

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Over 3 billion candlepower—man's most brilliant light source—can help supply aviation's "missing link" during restricted visibility landings. An exclusive Westinghouse innovation in lighting equipment, it can become a truly effective key element in Approach Lighting Systems, guiding the pilot from approach portal to runway threshold. It conquers the thickest weather and permits *earlier, positive* identification of the runway approach on transition from instrument flight to visual contact . . . long acknowledged as the most critical period during any instrument approach.

This extreme penetrative power is achieved through Westinghouse engineering which couples a number of Krypton Flash units with a master flash synchronizer. At maximum intensity this combination can pierce 1,000 feet of zero-zero weather by a series of 3,300,000,000 candlepower flashes seen as a "lightning stroke". When incorporated with steady burning lights in a proper approach lighting configuration—it eliminates the possibility of the system being confused with any other lighting pattern. And for safe follow-through, Westinghouse also provides powerful Hi-Intensity Runway Lights for final runway definition.

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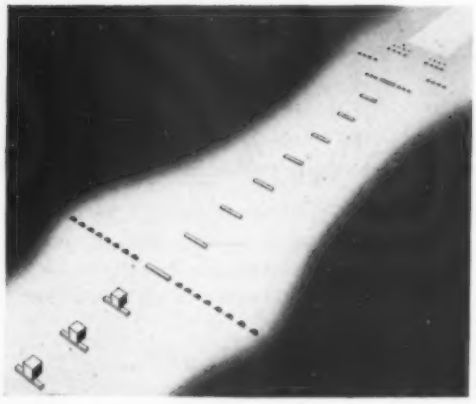

The Krypton Flash unit is shown at left with the tubular Krypton lamp in place. The flash lasts only 17 microseconds and is too short in duration to have a blinding effect on pilot. Spread is about nine degrees. A lower step of brightness is provided for better visibility conditions. At right is a typical approach pattern where the Krypton Flash units are superimposed on a single-row, center-line system of steady burning lights.

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Delta Air Lines' phenomenal growth has now been climaxed by its merger with Chicago & Southern Air Lines—which enables these merged air lines to offer greatly increased facilities to those who fly throughout Mid-America and the Caribbean.

Experienced air travelers fly *Delta-C&S*... some because they prefer its long record for all-season dependability; others because of the fast, comfortable equipment and the experienced, gracious personnel who do so much to make their flight enjoyable.

Two great air lines now are *one*. Delta, with 24 years experience in serving the South and linking it with the Midwest, joins with Chicago & Southern, which has served the Mississippi Valley for 19 years, and also ties Mid-America to the West Indies and South America.

On the basis of current passenger-mile figures, the new company will be the fifth largest domestic air line, serving 25,000,000 people directly in 55 U. S. metropolitan areas and 20,000,000 more in six Caribbean countries.

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Maintenance Bulletin Board

Radio Service Cart Proves Time Saver

A self-propelled radio service cart designed and built by Aer Lingus, the Irish airline, for its base operation at Dublin Airport is paying big dividends. In daily radio inspections alone, it has produced an estimated time saving in the order of 50%. During peak schedule periods, where communications items require prompt attention, its value has proved even greater.

Aer Lingus's cart is a dual-purpose unit. Equipment includes eight items of test apparatus along with a 24-volt aircraft battery power supply for use in conducting routine daily inspections. One item, permanently installed in the cart, generates synthetic signals for checking navigational receivers. The antenna is fitted into the roof of the vehicle.

The cart also serves as portable parts supply bin, carrying spare receivers, transmitters, fuses, lamps and other communications items. Other features include an adjustable spotlight mounted on the roof, for use as either a driving spotlight or to illuminate aircraft antennae during inspection or replacement, and flashing side and tail lights which distinguish the cart from fixed airport lighting or aircraft and vehicles moving on the ramp.

Before developing the radio service unit, Aer Lingus used a hand truck which had to be hauled from point to point by two men, and with the wide dispersal of aircraft at its Dublin base, distances of six miles sometimes had to be covered. An economical 3 hp gasoline engine used to power the new cart has proved a successful answer to the problem.

Radium Dials Discarded

Long accepted radium instrument dial markings are giving way to painted matte white markings in a recent decision by American Airlines involving fleetwide conversion of all instrumentation. Change is being made to improve instrument dial legibility with red and white cockpit lighting used by AA.

Matte white paint with its dull finish does not absorb light and presents a clearly defined marking for an indefinite period as opposed to the radium markings which absorb light and, after continued use, are said to give a blurred impression contributing to pilot eye fatigue.

American's Douglas DC-6A aircraft, recently delivered, and DC-7's on order, call for the matte white dials throughout. Added feature in AA's DC-7 airplanes will be installation of edge-lit instrument dials.

Oil Cooler Cleaner Helps Flying Tigers

More efficient oil cooler cleaning during overhaul with a 50% saving in time required to do the job is the net gain to Flying Tiger Line with the use of an oscillating table overhaul rig.

Development grew out of early experience by FTL in the operation of Curtiss C-46 airplanes wherein oil cooler performance during winter operations became a real source of trouble. The conclusion was that a faster and more efficient way of cleaning the coolers at overhaul would be the answer.

Working with technicians of Kelite Products, Inc. of Los Angeles, Flying Tiger engineers came up with the oscillating table as the solution to the problem. Procedure now calls for clamping the cooler to the table for the circulation of cleaning solvents. The oscillating motion of the table has been found to free the cooler entirely of carbon and other deposits in half the time required by other methods tested.

Power for the table is supplied by a ¼ hp motor. The arrangement permits varying the speed of the oscillation.

MACH. 1 is just about a thing of the past these days! New, ultra-sonic speed records are established with an amazing regularity. Speed's the thing! *Blast the barrier—full speed ahead!*

There can be no compromise with craftsmanship in the production of components for these planes. They must be made precisely as designed. For this very reason, leading aircraft producers rely more and more on Lavelle for jet components—turned out to meet most exacting specifications.

Years of experience in fabricating stainless steel, aluminum alloys and other allied materials have earned Lavelle a reputation as a truly unique and reliable subcontractor.

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Dual Purpose Cart

A combination auxiliary battery cart and portable lighting unit for small airport operations has been designed and built by Noble Newsom, Jr., airport manager at Buchanan Field near Concord, Calif. Unit is built on a triangular trailer frame using a solid axle 16″ wheel mounting on the aft end and a full casting 9″ wheel forward.

All purpose equipment includes a surplus Hartman Corp. model GKB generator starting unit powered by a Briggs & Stratton model 22P engine producing a generator output of 30 volts-100 amps dc. Accessory equipment includes two 12 volt aircraft type storage batteries mounted behind the engine, two 15 pound CO_2 fire extinguishers, and two individually controlled, 14″ full-swivel 24 volt floodlights mounted on top. A weatherproof electrical receptacle is provided in event additional lighting is needed.

QUICK SERVICE for Eastern Air Lines' flight line at its new Miami maintenance base is assured by radio-telephone hookup between mobile ground equipment and key maintenance and dispatch offices. EAL general foreman F. R. Bozick, is shown here in four-way conversation with aircraft routing, flight dispatch and line maintenance general foreman's office, working out an aircraft equipment problem.

MULTI-PURPOSE TELESCOPIC platform in use at Trans World Airlines new hangar at Chicago Midway Airport serves for both aircraft and hangar maintenance. Only one of its type in use in a commercial airline hangar, the Hi-Reach Platform Telescopter is built by Economy Engineering Co. of Chicago and extends to a height of 70 feet at a rate of ten feet per minute.

Hydraulic Conference Set

Third Transport Hydraulic Conference sponsored by Vickers, Incorporated, has been scheduled for the Park Shelton Hotel, Detroit, on November 3-4, 1953. This year's session will be under chairman Howard Pike, chief engineer for National Airlines, and agenda calls for discussion of transport hydraulic system experience in general, including accessories, tubing, fittings, and hydraulic fluids.

Remote fueling boom developed by U. S. Air Force technicians at Kelly AFB, Texas, is shown here during refueling of Douglas C-124 Globemaster. Looking on with USAF officials are aviation experts of American Petroleum Institute's aviation technical service committee representing all major oil companies.

• **Flying Tiger Line** is service testing the "high altitude" **Champion** type R-56S spark plug for the summer months in **Pratt & Whitney** R 2800 engines.

• **Repair kit** for spot re-sealing of aircraft integral fuel tanks marketed by **Minnesota Mining & Mfg. Co.** includes sealant, accelerator and plastic mixing tool. The small quantity containers permit preparation for sealing in five minutes.

• **Precaution adopted** by one major airline to prevent personnel injury in operation of **Convair 240** wing flaps during maintenance checks calls for use of a portable battery unit. With outside hook up, operator can run flaps with a full view of the area, and complete the check without waiting for electrical power to be restored to the aircraft undergoing overhaul operations.

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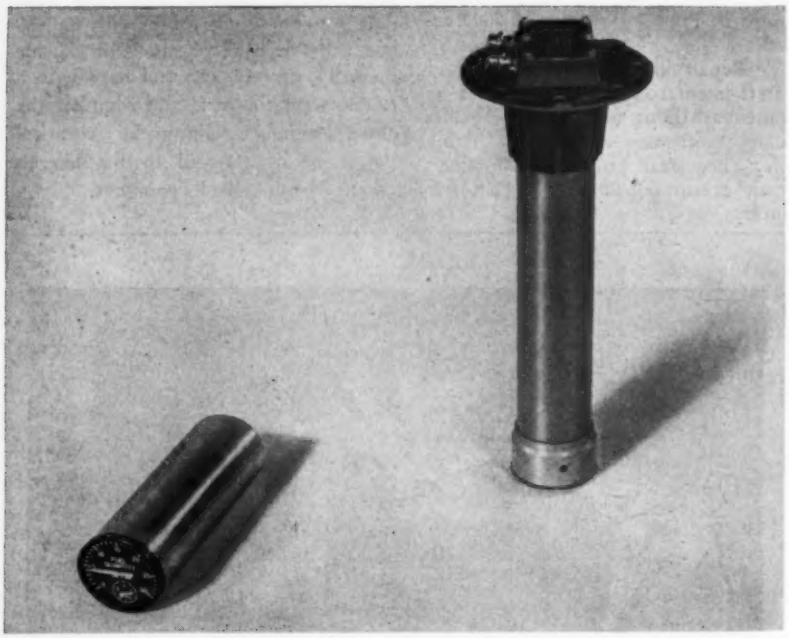
New Products

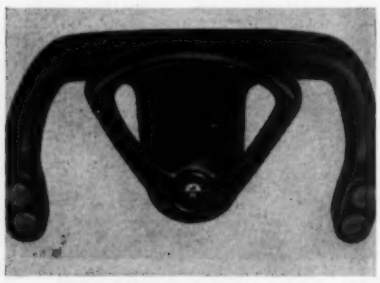


Two Unit Fuel Gaging System Marketed

A two-unit capacitance-type fuel gaging system, adaptable to all types of aircraft and said to weigh 50% less than other available units, has been placed in production by the Aviation Engineering Division, Avien-Knickerbocker, Inc. The new system uses only an indicator and tank unit for its complete operation and features:

- Design simplicity—system has been completely repackaged and miniaturized to save space and weight. Amplifier and bridge circuits, heretofore constituting a third system component, are now located in the indicator case.
- Improved performance—Two-unit system permits factory calibration within ½ of one percent accuracy, and is expected to eliminate past problems where its operation relied on field adjustment and was exposed to use of unreliable and misapplied field data.

New system is also expected to simplify maintenance and troubleshooting, according to the manufacturer. With fewer components installed, only the indicator case containing the amplifier and bridge circuits will normally require examination to locate trouble. Less wiring and connections should mean less maintenance, and rearrangement of components formerly mounted on the airframe to their new location in the instrument case will offer the maximum protection against the effects of vibration. Address: **Aviation Engineering Division, Avien-knickerbocker, Inc., 58-15 Northern Blvd., Woodside, L. I., N. Y.**



Steering Control

Adams-Rite Mfg. Co. of Glendale, Calif., has announced the development of a combination aircraft control wheel and nose steering control. These are mounted on shafts with common centers and are designed to improve cockpit instrument visibility. Control wheel is 14" in diameter and uses the "W" type shape for better instrument vision. The new nose steering control is centered on the control wheel permitting positive steering without obstructing instruments during the operation. Address: **Adams-Rite Mfg. Co., 540 W. Chevy Chase Drive, Glendale, Calif.**

Zinc Phosphate Coating

Oakite Products, Inc. has developed a new phosphatizing material called Crys-Coat HC for coating steel and iron to promote adhesion of paint. Used in either tanks or pressure spray washing machines, the new material produces a zinc phosphate coating which is crystalline in nature and has a weight ranging from 200 to 1200 milligrams per sq. ft., depending on the method of application and the material being treated. Crys-Coat HC can satisfactorily be used in a mild steel tank and does not require an all-stainless-steel setup. Its use, according to the manufacturer, requires no additives or toners. Address: **Oakite Products, Inc.,** 157 Rector St., New York 6, N. Y.

Sealed Enclosures

Transistor bases and hermetically sealed transistor enclosures, mass produced for a variety of applications, have been announced by the Hermaseal Co. Developments include bases for both point-contact and junction type transistors and are said to involve smaller, closer tolerance seals with improved performance characteristics. Address: **The Hermaseal Co.,** Elkhart, Ind.

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a gun platform. But up here you forget.
Up at thirty thousand feet, the sun is white
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To the engineers, she's the Cougar—
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is so many pounds of thrust and weight,
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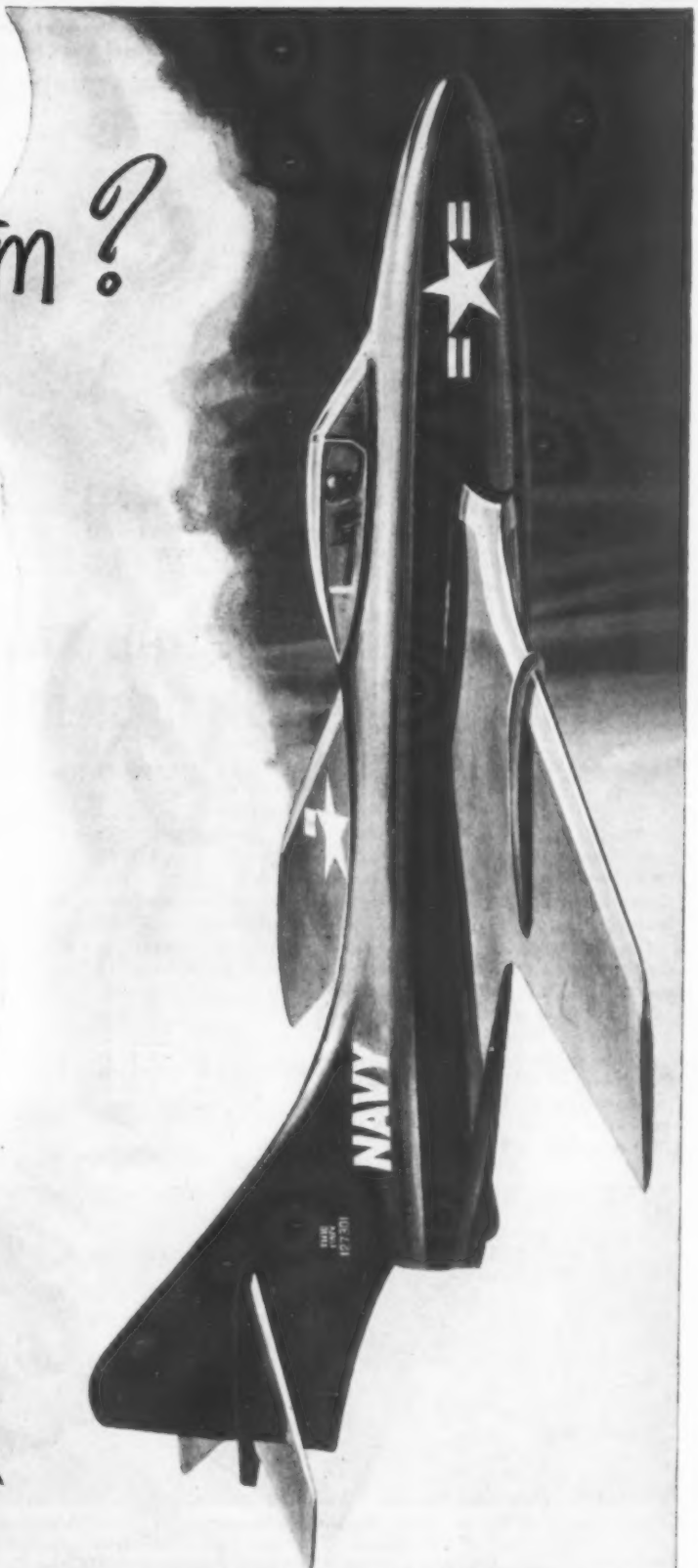
hours of work by hundreds of men and
machines, hours of inventiveness and
investigation. To some, she is requests to do
more, carry more, fly faster, which
somehow she does.

A gun platform? The best, and more.
So much more, you wonder sometimes how
men with only knowledge and experience,
with only their hands and their machines
could ever have created her.

Make your career in Naval Aviation.



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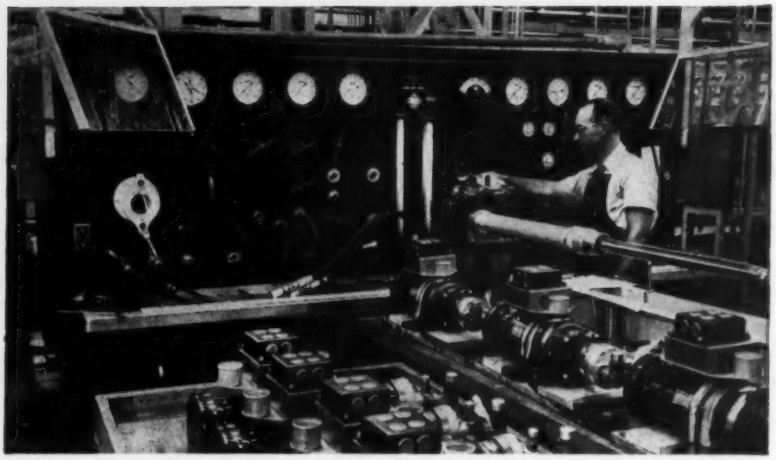
GREER TOPICS

Important News of Aviation & Industrial Test Equipment



Greer Stationary Hydraulic Accessories Test Stand, shown here at Lockheed's Georgia plant, provides a shop-type machine to fully check the performance of hydraulic system accessories including system pump at flow rates to 20gpm, pressures to 3400psi.

Why Does Lockheed Aircraft Test with Greer Equipment?

Why does almost any aircraft builder you can name test with Greer?

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For out-of-ordinary requirements, call or write Greer's engineering department. Men with experience you could never match are waiting to go to work on your problem.

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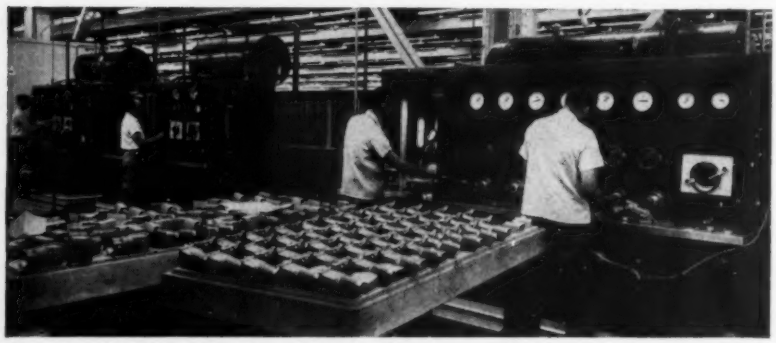


Greer Dual Fuel Booster Pump Test Stands, shown on left, provide test components for checking run-in and performance on two fuel pumps simultaneously with flows up to 60,000pph and pressures to 100psi. Greer Fuel Pump and Accessories Test Stand, on right, checks all fuel components with flows to 300gpm and pressures to 800psi.

Greer Hydraulics Inc. 454 Eighteenth Street, Brooklyn 15, New York

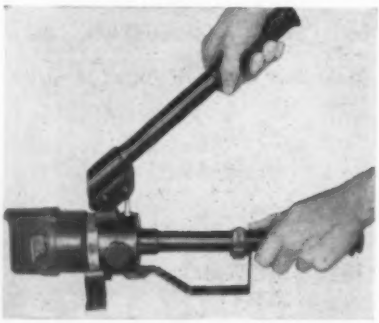
Field Offices: 1908 West Cermak Road, Chicago, Illinois • 25 South Main Street, Dayton, Ohio 2832 East Grand Boulevard, Detroit, Michigan • and sales representatives in all principal cities

Rate Gyro

A sensitive rate gyro weighing 1¼ pounds with a low power consumption that makes it adaptable to guided missile applications has been developed by Summers Gyroscope Co. Unit is called the Model 70 gyro and operates from 12 and 24 volt dc, and 400 cycle ac power sources.

The model 70 is designed to register angular rates of rotation. The electrical signal output may be used for telemetering and control. A change in potentiometer resistance on this gyro is directly proportional to the angular rate about the input axis.

Depending on the range desired, coil spring or torsional rod restraints are incorporated to limit the rotation of the gimbal about its axis. Variations of the gyro are produced with or without damping features and hermetic sealing. Address: **Summers Gyroscope Co.**, 2328 Broadway, Santa Monica, Calif.



Crimping Tool

Hydraulic crimping tool now being produced by Aircraft-Marine Products, Inc. for installation of AMP solderless terminals develops 12 tons of pressure. It is adaptable for terminal installations for wire sizes ranging from No. 8 to No. 4/0 by use of interchangeable dies. Unit weighs 12 pounds and is said to be easily operated by one man. A special ram-holding feature retains terminals in dies while wire is being inserted. Address: **Aircraft-Marine Products, Inc.**, Harrisburg, Pa.

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All hail to the ace in the "wild blue yonder" . . . but let's give with some man-sized cheers for the lads who slug it out at hill-top level. From the time they take off . . . till the mission is completed, these strategic fighter bombers and tactical close support pilots face a brutal blasting all along the way.

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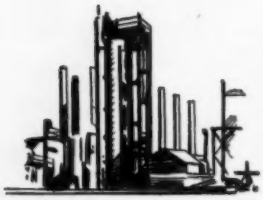

To begin with, a complete analysis is made at the refinery when the newly manufactured fuel goes into storage tanks to verify that the product meets or exceeds government, airline, and ESSO's own standards.

A second series of tests is made on composite samples taken from the tanker immediately after loading.

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voyage, cargo samples of the fuel are checked for quality just before off-loading into ocean terminal storage tanks.

Product samples from the ocean terminal are subjected to a quality analysis; from the ocean terminal the product may go through an inland storage depot or directly to airfield storage.

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When airport refuelers are loaded, and after each change of shift, the fuel is carefully checked for possible water content and contamination.

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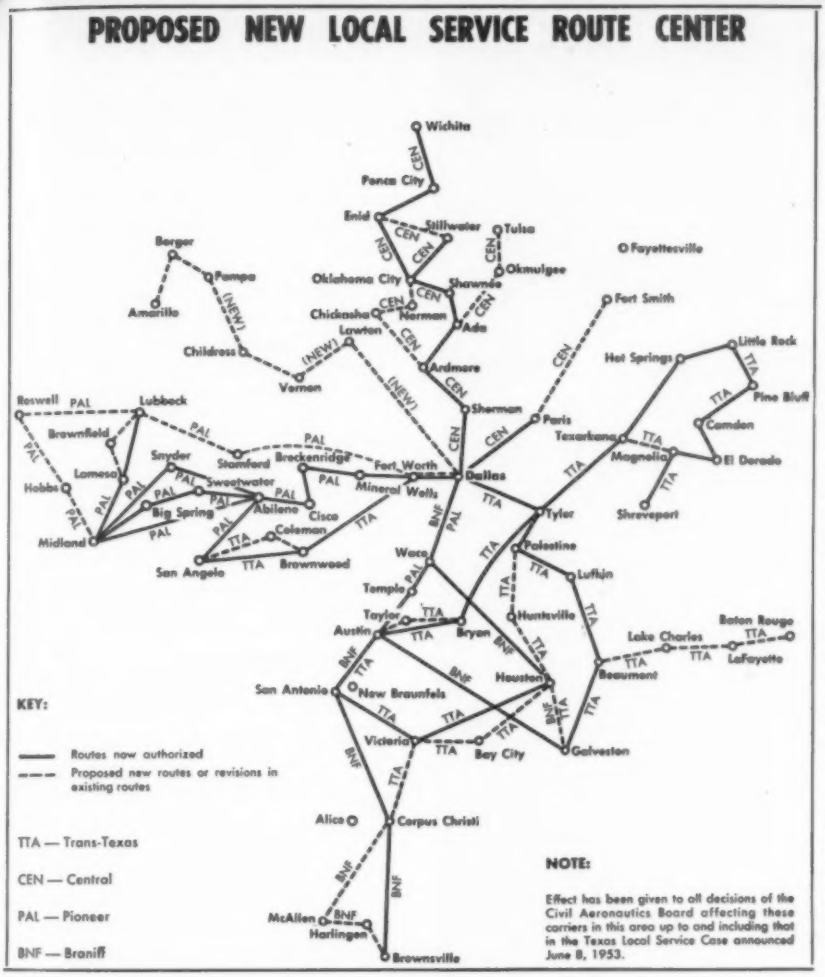


Local Service Lines Fight For Survival

Four types of solutions to improve service while cutting subsidy are being considered.

by WILLIAM V. HENZEY

THERE ARE NO ASSURANCES that the local service industry, as now comprised, will escape Government molestation in the smoldering subsidy reduction fight. But rallying efforts by the industry itself, the communities which it serves, and legislators representing those communities, indicate one thing apparently for certain—there will continue to be a local service industry.

What shape it will take after a year of snipping and some out-and-out bombarding by Congress and the CAB is not discernible at this time. But those that help to form policy in CAB feel these elements will go into the product which ultimately will survive:

- A case-by-case shuffling of points between routes of local lines and trunks with subsidy reduction the primary guide.
- More mergers of local lines with a CAB ban on linking regions through local mergers possibly being discarded; also, some trunk-local mergers likely.
- Selection of trunk lines for certain new local route awards which previously would have gone strictly to local service carriers.
- Elimination of a few local lines.

Presently, CAB has no firm policy on the question of whether trunks or local lines should serve any given point of medium or small size, according to Board Chairman Oswald Ryan. "We decide," he said, "each case on its individual merits."

As one guide, the official pointed out, if long-haul factors are involved to and from a given city, the weight in awarding that stop usually leans toward the trunk carrier. If short-haul travel factors predominate, the award is usually made to the local line.

However, another guide is expected to wend its way into Board thinking, namely, can the trunk take over without the need for subsidy? If so, the trunk will, in most cases, get the award. This, in effect, is a modification of the so-called "Johnson proposal" in which the Colorado Senator of that name suggested trunk absorption of local points or segments to cut subsidy needs. (AMERICAN AVIATION, May 11).

The same factor will weigh heavily in new route cases where, in the past few weeks, more and more trunk carriers have been added voluntarily or involuntarily to proceedings originally designed for local lines' participation.

For example, a Tulsa-Kansas City case in which possible transfer of an Ozark Airline segment to Central was the only issue, has been expanded to see if Braniff or Continental should not also be considered as possible recipients of the route which includes such points as Coffeyville, Emporia, and Chanute.

In another case, Frontier applied for extension of its local route from Billings, Mont., to the Williston Basin Area in North Dakota. Since then, CAB has opened the proceeding to consider if Braniff shouldn't serve the Williston Area.

In the Ozark Renewal Case, an Eastern application for service between Evansville and Twin Cities via St. Louis, Decatur, Springfield, Bloomington, Peoria, Burlington, and others, has been consolidated, with CAB "construing that the application is for purely local services and that Eastern will accept restrictions to insure the local character of any services authorized."

These are but a few of a growing list of such instances. There will be more under the impetus of the subsidy-reduction drive.

As for mergers, CAB in the past has adhered to a policy which generally approves mergers of carriers in a particular trade area but balks at linking carriers from different trade areas. This could now be changed.

Only companies known now to be in the merger market, although widely apart on terms, are Southwest and Bonanza. But this was started by a CAB investigation 18 months ago and consequently cannot be considered the product of a new policy.

However, a few local airline mergers plus one possible local-trunk merger are not unlikely in the near future.

Meanwhile, a spirited drive not only for survival but for advancement by the local industry and its supporters is chiefly responsible for broader thinking on the part of CAB, and Congress.

Down in Dallas, a group of 35 southwest communities joined with the City and Chamber of Commerce of Dallas to present a novel approach to

improving local service to meet changing economic conditions. With an eye on the future, the group presented an application to CAB for an investigation to weigh a proposal for improved operations between Dallas and points in a five-State radius.

Said the Dallas petition: "Present services are and will be inadequate, not properly adapted to the present and future needs of the domestic commerce of the U. S. insofar as petitioners are concerned, and not such as properly to afford the inherent advantages of air transportation between such communities and localities as contemplated by the Act . . ."

For example, Dallas said, it has no non-stop local service available today to such points as Abilene, Beaumont, San Angelo and Texarkana. Under the proposed plan, based on a study by the New York consulting firm of James C. Buckley, Inc., this situation would be remedied, as would many others where either limited service or none at all is available. (See map.)

In Congress, added stimulus was provided recently by Rep. Lloyd M. Bentsen, Jr., (Dem., Tex.), who introduced House Resolution 257 calling for a Congressional investigation into the fundamental problems of local air service, including the CAB's policy of short-term certificates for local air routes.

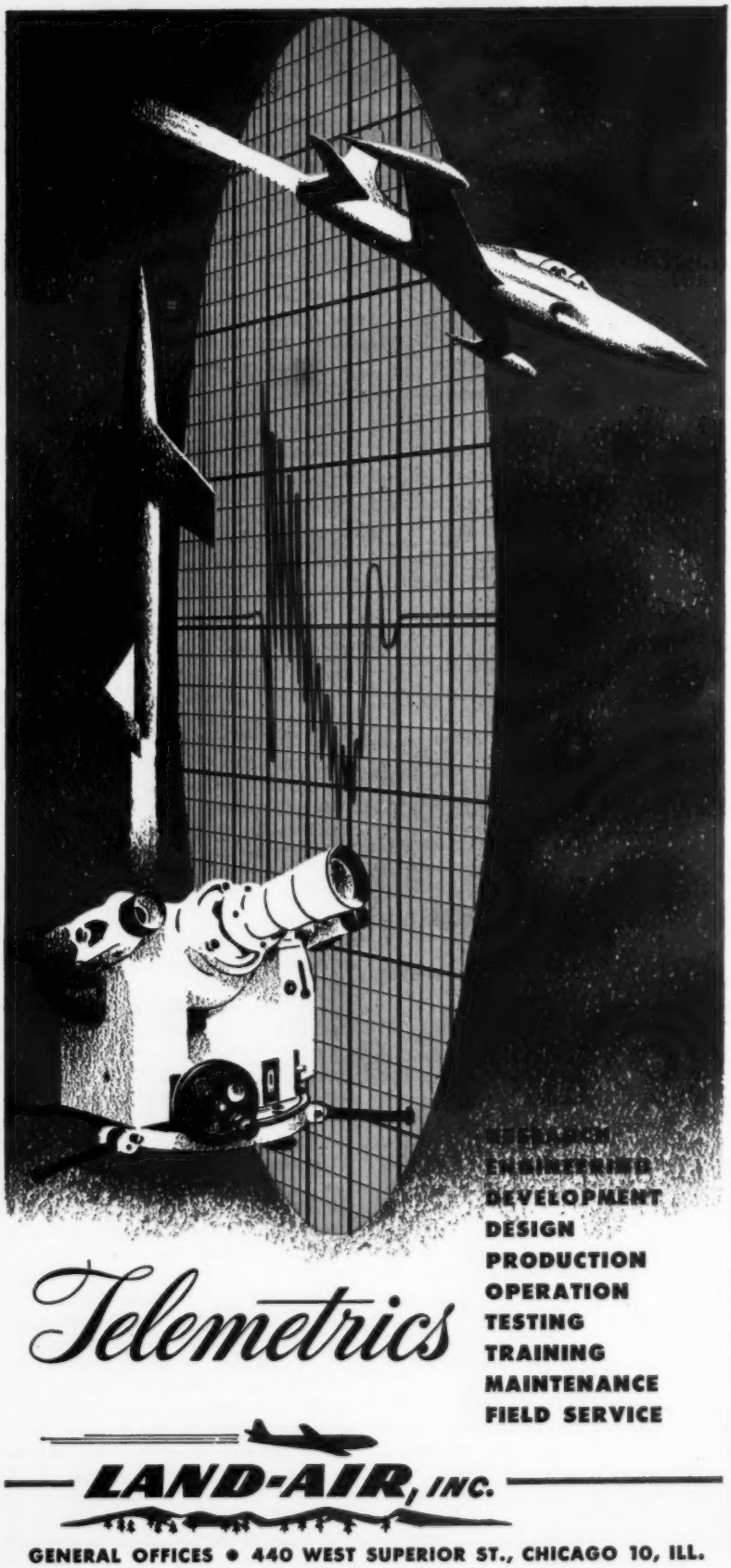
This, incidentally, was unanimously endorsed by the newly formed Southwest Local Air Service Conference out of which grew the above-mentioned Dallas application for improved service. This group hopes to "have a constructive influence on the future of feeder airlines throughout the country."

From the industry, came the voice of Leslie O. Barnes, new president of Allegheny Airlines (formerly All-American) who termed "any thought or plan to replace or reduce the service provided by the local carriers a backward step and the cruelest type of faithlessness."

Barnes' outburst, delivered at Cleveland where his line recently opened up a new route, was not confined to criticism. He voiced new methods of defining subsidy.

The aroused local industry and the recipients of its service thus have removed that segment of aviation from the "easy target" category. Changes by CAB and Congress will have to be well thought out. Belt-tightening will be in order since subsidy payments will stand out under the new reorganization plan giving CAB responsibility for such payments instead of the Post Office Department.

But a changed, not an extinct, industry looms as the likely result of the current situation. • • •



Wiggins Loses Appeal, Routes Split

The CAB lined up 3-2 against Wiggins Airways this month ordering termination of the New England line's local service certificate on August 1. In the same decision, Mohawk Airlines was authorized to extend its routes from Albany to Boston, and various cities were added to Northeast Airlines' trunk routes.

CAB Chairman Ryan, vice-chairman Denny, and Member Gurney, all Republicans, voted against Wiggins. In effect, they were affirming a decision made last October. Democratic Members Lee and Adams dissented, claiming Wiggins should be continued in business for a further period.

The recent ruling was on Wiggins' petition for reconsideration of the October decision which otherwise would have forced it out of business on December 31, 1952. The carrier, which had never operated planes larger than Cessna T-50's, had plans for conversion to DC-3's and had submitted an alternative route plan to CAB.

The majority found that break-even subsidy need of $547,000 annually would be required by the new proposal, whereas Mohawk and Northeast could provide the service with a net saving to the Government of about $115,000.

Mohawk's new Albany-Boston route, effective August 1, is via Pittsfield, Springfield/Westfield, and Worcester. New points added to NEA's certificate, effective July 3, were Pittsfield, Woonsocket, Fitchburg, and Rutland.

At press-time, Wiggins had not decided what its next move would be. In such cases, appeal to the civil courts is one possibility.

CAB Members Lee and Adams, meanwhile, did not feel Wiggins had been given the same opportunity as some other local lines. In their dissent, they said: "We are convinced that if Wiggins were given a proper route system and permitted to operate with DC-3 or an adequate feeder aircraft, Wiggins, just as the other local carriers have done, would be able to make a satisfactory showing in the public interest."

North American Wins Further Delay

North American Airlines' challenge of CAB's right to conduct enforcement hearings against it moved from Los Angeles to Washington early this month and indications were that the enforcement case would be deferred for several months.

In Washington, North American first secured a temporary restraining order against CAB from U. S. District Court Judge Burnita S. Matthews. This was to remain in effect pending argument and decision by the court on a motion for a temporary injunction.

The enforcement hearings opened June 23, in Los Angeles before Examiner William F. Cusick. They were immediately recessed by virtue of North American court action in Los Angeles. Two weeks later, when the Washington court issued its restraining order, CAB recalled its examiner and four enforcement people from Los Angeles.

North American contends it would suffer irreparable injury from the hearings. It also argues that the hearings are illegal because the enforcement case against it is based on regulations which, North American claims, are invalid. The injunction issue was scheduled for argument before the Washington court on July 13.

Attorney's estimated it will take two weeks for a decision and then an appeal to a higher court is likely.

CAB Miscellany

Eastern Air Lines applied to CAB for an exemption to extend its routes from Houston to Dallas and/or from St. Louis to Dallas "to remedy the **air transport emergency** in Dallas caused by the diversion of air schedules from that city to the new Ft. Worth International Airport."

Riddle Airlines applied to CAB for a new **all-cargo certificate** between Miami, New Orleans, and Houston, on one hand, and numerous Latin American points.

Cleveland Airways asked CAB for a permanent or temporary certificate to conduct **helicopter operations** in the Cleveland-Akron area.

Trans World Airlines has asked permission to withdraw new route application proposing service on New York-Chicago route to Buffalo, Syracuse, and Rochester. Extensive studies show "limited benefits" to the public would result from the proposed service, TWA said.

CAB News

As of Now

CAB hearings in the **NORTH AMERICAN AIRLINES ENFORCEMENT CASE** will be stalled for "several months," because of legal action brought by the carrier against CAB's right to conduct the hearings. The matter is now in the U. S. District Court in Washington, D. C. and an appeal to a higher court is an almost certainty. The enforcement hearings have been recessed since June 23.

Hearings in the **FLYING TIGER—SLICK MERGER CASE** were completed in the record time of 3½ days and indications point to a final CAB decision sometime in October.

The **COLONIAL AIRLINES MERGER PROCEEDING** moves to oral argument before CAB on July 28, but there are no estimates as to when a final ruling will be made. Since international routes of Colonial are involved, the matter must get White House approval.

The **TRANS-PACIFIC RENEWAL CASE** has developed into one of the most controversial proceedings of the year. At press-time, hearings were in progress for the third week and only Northwest and Pan American had presented their cases. Still to be heard were TWA, Transocean, Bureau Counsel, and the Post Office. Decision is expected in January, 1954.

Recent CAB Decisions

United Air Lines has been admitted as an applicant for a midwest local service route in a proceeding involving renewal of the local route No. 106 inherited by Braniff last year when it acquired Mid-Continent.

Western Air Lines and **Northwest Airlines** have been turned down on requests to suspend at so-called "marginal points." WAL's proposal, involving Spearfish, S. D., is set down for public hearings; NWA's, involving Kalispell, Mont., was denied outright.

Northeast Airlines may drop Provincetown, Mass., from its routes under a new CAB investigation. Plan is to open the door for a taxi line, Provincetown-Boston Airline, to carry mail under a Star Route contract between Boston and Provincetown.

CAB Calendar

July 21—Oral argument before the Board in Pacific Northwest-Alaska Tariff Investigation. Washington, D. C. Docket 5067 et al.

July 23—Oral argument before the Board in Consolidated Western-Inland Mail Rate Case. Washington, D. C. Docket 5148.

July 28—Oral argument before the Board in Colonial Airlines Merger Proceeding. Washington, D. C. Dockets 5666 and 5569.

July 30—Oral argument before the Board in Braniff Airways Final Mail Rate Case—Domestic. Washington, D. C. Docket 5142.

Aug. 3—Hearing in Resort Airlines Miami Stopover Investigation. Washington, D. C. Docket 5949.

Aug. 3—Hearing resumed in Large Irregular Air Carrier Investigation. Los Angeles, Calif. Docket 5132 et al.

Four Airlines Battle for Pacific Routes

Testimony reveals new TWA Connie order, ranges from jet streams to international politics.

From earlier charges of "cannibalism" hurled at Pan American and TWA by Northwest Airlines, stormy hearings in CAB's Trans-Pacific Renewal Case have moved into the realm of "flying the jet streams," "fleets of 100 Constellations," "world-wide tourist services," plus a forecast for "a great industrial revolution in the Far East."

As this issue went to press, TWA president Ralph S. Damon revealed on the witness stand before CAB Examiner Thomas L. Wrenn that TWA "is placing orders" with Lockheed Aircraft Company for eight new Super-Constellations, Model 1049-E, with turbo-compound engines. Further, said Damon, TWA has an option for "up to 12 more Super-Connies."

Added to TWA's current fleet of 78 Constellations, the new order and option would give the carrier a Constellation fleet of 98 planes. Deliveries on the new order will start in the Spring, 1955, according to Damon.

Hearings have been in progress in Washington since June 23. Basically, they involve:

- Northwest's bid for permanent renewal of its North Pacific route to Tokyo, plus extension of its route to India to join TWA at Calcutta;
- Pan Am's bid for non-stop rights between the U.S. and Tokyo to utilize the 1600-mile shorter North Pacific route with its present longer route via Honolulu; and
- TWA's held-over application from last year's trans-Atlantic case in which it seeks extension from India to Japan to join NWA at Tokyo.

Except for a transcontinental route in the U.S., Pan Am now has a round-the-world route. TWA and Northwest want to set up a second U.S. round-the-world system differing only on where the Far East junction should be.

Around the World

Paramount in the proceeding has been talk of a round-the-world tourist service starting next April 1, assuming agreement can be reached within the International Air Transport Association. TWA announced during the hearings that it would, in connection with Northwest, offer the tourist service at a fare of $1200.

This would be more than $500 under current fare levels for a round-the-world trip and about $375 under the lowest combination tourist-first class fares now available.

Currently, there are no tourist services in the trans-Pacific market. Last year, Pan Am proposed such fares based on 70% of first-class only to lose out in an IATA fight. Northwest, which during that fight opposed the service at that time, is proposing tourist fares in the present case based on 60% of first-class.

Thus, to this point the hearings have developed "mighty Constellation fleets" flying round-the-world at tourist fares. It took Pam Am witness Gordon F. Maxwell, Pacific-Alaska division manager, to add to the picture.

Maxwell foresaw Pan Am using the jet streams, "winds of about 75-85 miles per hour," encountered at general altitude of 35,000 feet. In the Pacific, said Maxwell, "the stream passes directly over Midway and hence our practice to ride it to Midway and then divert to Honolulu. If we were permitted to ride this stream on out . . . it would take us almost directly into Seattle/Portland."

Time savings on Tokyo-Honolulu runs using the "stream" have been 7 to 8 hours, according to Maxwell.

Cut Rate Cargo

On the economic side, Maxwell added that Pan Am will not only introduce tourist fares in the Pacific, but will soon push for a 45% cut in bulk cargo rates, a proposal similar to one now being fought out in IATA for trans-Atlantic services.

From the political angle, Warren Lee Pierson, TWA's board chairman, emphasized that "national interest factors transcend all other issues involved in this proceeding." He claimed the failure of CAB and the White House to create a second round-the-world service would indicate to the peoples of the Far East "a lack if interest on the part of the U.S."

Pierson predicted a "great resurrection of the peoples of those countries in the near future with revolutionary industrial growth. He felt that China will release itself from the U.S.S.R. in the near future and Indo-China will go the same way as China.

Because certain Chinese cities, such as Shanghai, cannot be served by U.S. carriers with appropriate certificates because of unsettled political conditions, the testimony was pertinent to the case and permitted on the record.

The Pierson political predictions were not free from attack, however, as fiery Pan Am attorney Henry J. Friendly challenged the "arrogant" statements.

Also not by-passed by Pan Am were the "cannibalism" charges made by NWA president Harold R. Harris early in the case. Chief policy witness of Pan Am, v. p. Alvin P. Adams, retaliated that Pan Am is being restricted to circuitous routes to the Orient "for no other reason than to feather-bed Northwest at a price of millions of dollars to the taxpayer."

Competition

"You would think," Adams said of NWA, "that a carrier which got into the Orient by preaching competition would have enough intestinal fortitude to be willing to compete on a fair basis and not ask the Government to hang a penalty of hundreds of miles on the pioneer carrier and its passengers."

Thus went the three-way battle of the scheduled airline participants. Still to be heard was Transocean Air Lines, a large irregular carrier, with much experience in the Pacific, which is seeking a trans-Pacific all-cargo route.

After these hearings, most of the same parties will resume their fight in a follow-up case involving West Coast-Hawaii services. A third proceeding involving U.S.-Alaska services will complete the cycle. All, because of "overseas" implications, will first be decided by CAB and then sent to the White House for final approval. January is the target for final ruling on the Trans-Pacific battle. • • •

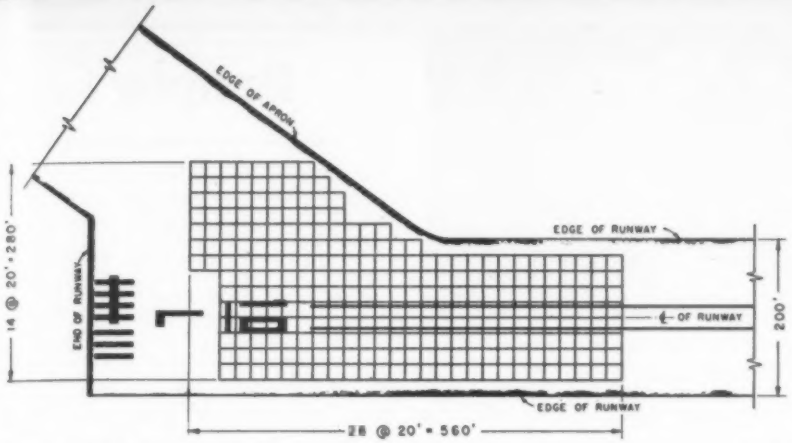
Financial Briefs

Capital Airlines set one-day all-time company record on June 26 with $175,367 operating revenues.

Avco Manufacturing Corp. reported $3,315,897 net income for six months ended May 31 on $219,455,797 sales, against $3,542,926 net on $130,834,354 sales in same 1952 period.

Bendix Aviation Corp. and wholly-owned domestic subsidiaries had $8,596,601 net on $310,331,724 income for six months ended Mar. 31, after provision of $20,928,842 for federal taxes. In same 1952 period, net was $6,541,665 on $242,775,471 income after taxes of $21,973,899.

Pacific Airmotive Corp. reported unaudited net of $7,823 on $9,502,160 sales for six months ended May 31, against $483,104 profit on $14,004,655 sales in same 1952 period.



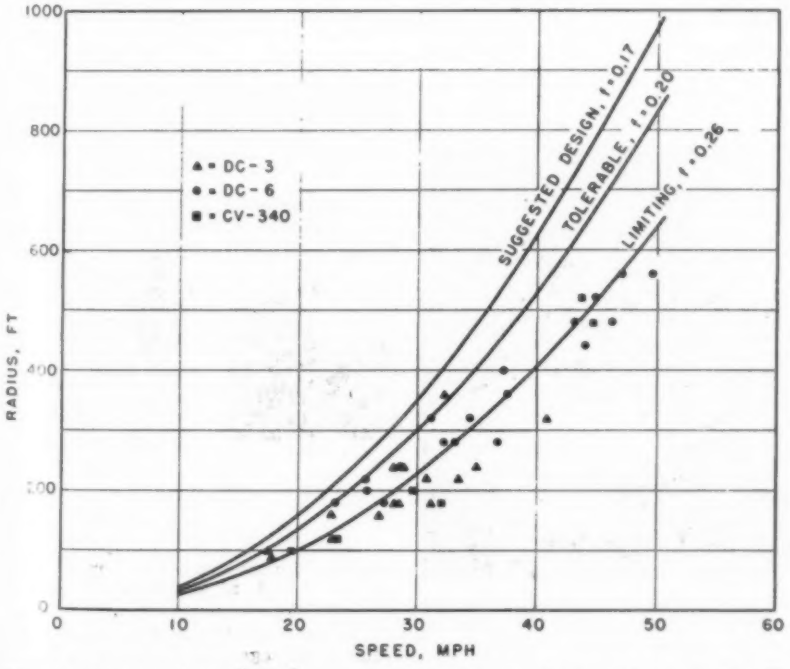
TEST SET UP included a grid marked runway turn-off which permitted accurate checks of aircraft and landing gear travel.

Practical Aspects of Runway Design

Better runway and taxi turn-off arrangements are needed to handle jets.

BETTER DESIGNED taxiways are part of the answer to relieving the traffic congestion at many major airports today. Due to the increase of air carrier schedules, and local and transient operations, the airport operators have been busy thinking of ways to move aircraft off the runway as rapidly as possible.

Airport architects and engineers have attempted to design airports for a goal of 40 landing and take-off operations per peak hour, but under actual operating conditions the terminals have failed to handle the expected traffic. One factor working against the airport operators has been the increase in landing speeds. Almost every new aircraft



CORRELATION OF FACT and theory as it relates to requirements for turn-off radii is shown here.

off the manufacturer's assembly line needs longer, time-consuming landing runs.

Today most taxiways leading from runways have been designed for almost-stop operation of landing aircraft before a turn-off can be started. The delay of 20 to 30 seconds before turn-off can be effected has proven in the past to be a detriment to the smooth flow of traffic when an airport is at its peak hour of operation or experiencing instrument flight conditions.

The Instrument Landing System and the Ground Control Approach systems have minimized let-down times to the airport considerably during the past few years, but if delays are encountered on the runway due to outmoded taxiway designs the investment in the radio and radar landing aid facilities is not fully exploited.

A study recently completed by John H. Jones, assistant professor of civil engineering, University of California, and Robert Hornjeff, lecture and research engineer, U. of C., has disclosed that an aircraft's speed is the limiting factor when determining a safe curvature of taxiways for high-speed turn-off from runways.

Tests conducted by Jones and Hornjeff, with the assistance of United Air Lines and the management of the San Francisco International Airport, complement the CAA's work on taxiway locations which was completed in 1951. The group used three types of aircraft for the tests: the Douglas DC-3, the DC-6, and the Convair 340. Maximum take-off weights for these aircraft are: DC-3, 25,000 pounds; Convair 340, 47,000 pounds; and the DC-6, 92,000 pounds.

With the use of a 16 mm motion picture camera (see photo) attached to and extending out and down from the cockpit window, the paths and speeds of the aircraft over a grid formed of 20′ x 20′ squares painted on the NW/SE runway at the San Francisco Airport were determined (see drawing).

The test was engineered to indicate four factors: (1) the aircraft speed; (2) the type of landing gear; (3) total angle of turn; (4) passenger comfort.

It was determined after the first series of tests that speed was the only significant factor restricting the turning aircraft's arc. This limiting speed was assumed to be that just before a skid and was based on the pilot's judgment. From the passenger's point of view, however, the impending skid was often indicated by nose-wheel bounce and tire squeal. In addition tire marks on the pavements served as skid indications.

Due to different types of landing

gear the steering of the aircraft differed. The DC-3, a tail-wheel aircraft, was steered by the two main wheel brakes, engines, and rudder in various combinations. The other two aircraft used were of the tricycle landing gear type and steered by the means of the nose wheel.

During the tests the average winds were measured at less than 15 mph and were a negligible factor restricting the radius of turn.

The mechanics of the test consisted of taxiing the planes over the grid a total of 57 times, and at various speeds from 16 mph to 53 mph. It was observed that "body roll" was negligible during the tightest turns.

The grid was plotted by observing the ground position of the camera with respect to an intersection of the grid. With the relative positions of camera and landing gear known, the path of the landing gear could be plotted.

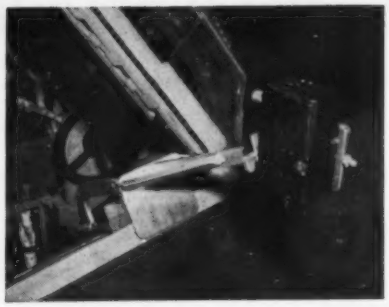
The report stated that "The radii of the curvature were determined from circular arcs which were used to fit smooth curves to the plotted points. The speed of the aircraft was readily determined from the number of exposed frames of film between crossing of grid lines and known camera timing in terms of frames per second. The data were plotted from observed radius and the corresponding speed for each run."

Jones and Hornjeff added, "Upon fitting various curves to these data it was found a curve representing the fundamental equation of radial force opposed by frictional force used in the design of highway curves was satisfactory."

This equation is: $\frac{Wv^2}{gR}$ (the radial force) $= Wf$ (the opposing friction), where W is the weight, g is the acceleration of gravity, R is the radius, and f is the friction factor. (A friction factor of 0.3 means that the horizontal acceleration due to turning is 30% of g, or 9.7 ft. per. sec.)

The following results were obtained by the researchers with the application of the above formula: "A curve expressed by a friction factor of 0.26, shows a good fit, and represents the observed "limiting" condition for operation on dry bituminous pavements when wind velocities are low. The particular friction factor of 0.26 is the mean value of the f's calculated by the above formula for each of the 41 plotted points.

"The curve designated as 'Tolerable' is one which includes nearly all the plotted points and was established on the basis of a constant friction factor of 0.20. For a particular speed, the radius should not be less than indicated by this curve, otherwise skidding might occur."



CAMERA clamped to cockpit window photographs grid lines.

"The 'Suggested' design curve shown is expressed by a friction factor of 0.17. This curve provides a margin of safety of 50% over the radii established by the 'limiting' curve. It is believed this margin of safety is necessary to account for the difference between the favorable conditions under which the tests were conducted and the more frequently encountered service conditions."

For use as design radii the suggested rounded values are:

Speed, mph.	Radius, ft.
10	50
20	150
30	350
40	650
50	1000

Jones & Hornjeff conclude that, for a given taxiway or runway surface, speed is the sole factor which has a dominate effect on limiting value of the radius, and that type of plane and type of landing gear have no effect on the speed-radius relationship. • • •

THUNDERSTORM PLOTTER designed by United Airlines captain W. P. Miller and now in use by UAL, makes it possible for company meteorologists to warn pilots of bad weather areas by simple reference to the numbered grid on the route map.

People

AIRLINES

J. G. Helvey, formerly executive vice president and general manager of Riddle Airlines, is now president of the concern. Controlling interest in the certificated all-cargo line was recently purchased from **John Paul Riddle** by a group from Miami represented by B. W. Turner.

John A. Cunningham, operations vice president for Mid-Continent Airlines prior to the Braniff Mid-Continent merger, has been appointed vice president of operations for Pacific Northern Airlines.

Sir Hudson Fysh, chairman and managing director of Qantas Empire Airways and director of Tasman Empire Airways has been appointed to the board of directors of British Commonwealth Pacific Air Lines by the Australian Government.

Elden Brown and **Dan Dietrich** have been promoted to cargo sales manager and passenger sales manager, respectively, for Continental Air Lines.

Charles Larrabee has been named superintendent of agency and interline sales for Pan American World Airways' Latin American Division. Larrabee succeeds **Shelby W. Merrill** who has been made cargo sales superintendent.

William R. Spencer has replaced **Stewart Faulkner** as director of publicity for Continental Air Lines. Faulkner has joined Trans World Airlines as west coast regional director of public relations.

Stanley Gewirtz has been appointed assistant to **Admiral Emory S. Land,** president of the Air Transport Association, to study legislative problems that may affect the scheduled air transport industry.

Claude R. Turner, one of the original pilots signed by Transocean Air Lines when the company was formed in 1946, has been appointed chief pilot of the firm's Pacific Division.

Cunningham

Heileman

Manufacturing

Maj. Gen. Frank A. Heileman (USA, Ret.), former Chief of Transportation for the Army, has been elected to the board of directors of Hiller Helicopters.

Charles F. Horne has been appointed manager of Consolidated Vultee Aircraft Corp.'s Guided Missiles Division at Pomona, Calif. Horne, former CAA Administrator, replaces Gage Irving, who resigned several months ago.

General E. R. Quesada (USAF, Ret.), vice president and a director of Olin Industries, and former Commanding General of the Tactical Air Command, has been named to the executive committee of the Flight Safety Foundation, Inc.

J. Carlton Ward, Jr., former board chairman of Thompson Industries, and an executive in the aircraft industry since 1935, has been elected president of the Vitro corporations—The Vitro Manufacturing Co., Vitro Corp. of America, and Vitro Chemical Co.

Robert W. Brattvet has been appointed aircraft sales and service manager of the BG Corporation.

Walter N. Connors has joined Kellett Aircraft Corp. as industrial relations administrator. Prior to his appointment with Kellett, Connors was public relations administrator for Prewitt Aircraft Co.

John N. Wolfram has been named to the newly created post of administrative engineer of the Parker Appliance Co. Wolfram, who has been with Parker 21 years, was formerly staff engineer.

Fred Sansonetti is the new assistant general manager of Airborne Accessories Corp.

Lou S. Gearhart was recently appointed advertising director of United Aircraft Products, Dayton, Ohio.

Frank Warga has been promoted from foreman of AiResearch Manufacturing Co.'s aluminum foundry to general foundry foreman, in charge of AiResearch's steel foundry near Pasadena as well as the main plant's aluminum foundry.

C. H. ("Dutch") Schildhauer has been appointed assistant to the president of Air Carrier Service Corp.

MILITARY

Brig. Gen. Kurt M. Landon has assumed the duties of Chief of Staff of the Air Research and Development Command (ARDC) in Baltimore.

The following employes have recently completed 20 years or more of service in the aviation industry:

- **Gage Mace,** American Airlines. Regional director of operations, Los Angeles. 25 years.
- **Joseph R. Smith,** United Air Lines. Captain, Seattle. 25 years.
- **William Laurenz,** United Air Lines. Supv. of ground communications equipment, San Francisco. 25 years.
- **H. B. Cox,** American Airlines. Captain, Los Angeles. 20 years.
- **Charles L. Sharp,** Pan American World Airways. Captain, Rio de Janiero. 20 years.
- **Corliss B. Ragland,** Pan American World Airways. Maintenance inspector, Miami. 20 years.
- **Alberto Jasso,** Pan American World Airways. Mechanic, Brownsville 20 years.

Airline Commentary

By Eric Bramley

PRESENT TRANSPORTATION TREND has some of the researchers puzzled. On one hand, airline traffic (passenger-miles) is up more than 20% over last year. On the other, rail passenger business (coach and pullman) started downward in July, 1952. Every month since then, it has been lower than in the same month of the previous year. Rails are now carrying no more traffic than they did in 1923. And for the first three months of this year, bus travel dropped 6%. What's the answer? Is a dip in travel going to hit the airlines later than other forms of transportation—a "delayed recession?" Or is the bus decline due to private autos, while rails are losing business to autos, buses and planes—in which case maybe everything's okay for the airlines? If you have a good answer, the experts would like to know.

• •

It's encouraging to note that airlines are moving to establish closer working relations with the National Air Taxi Conference. BOB TURNER, Northeast's vice president-sales, heads a committee to work with NATC. His selection, we'd say, is a tribute to the fine air taxi program he worked out for NEA.

• •

Why do some airlines still drag their feet on simplifying ticket procedures? We bought some air coach tickets recently, and the agent went through the laborious process of writing them out on book-type stocks—names, trip number, a notation that this was a coach flight, time, fare, tax, etc. Handling of these tickets took one agent out of circulation for a considerable period of time. Why can't there be a special coach ticket with a lot of this information pre-printed? The same, of course, applies to first-class. We know that some carriers are using pre-prints, but why do others hang back? Why make it hard for the passenger to part with his money?

• •

Latest industry attempt to work out a satisfactory uniform penalty system for coach flights has failed, we're told. Passengers who didn't show up for trips or who failed to cancel space before a certain hour were to have been penalized, but carriers can't agree on all the conditions. Proposal is said to have grown out of current dissatisfaction of some lines with the reconfirmation rule, and the system, if successful on coach, might eventually have been extended to first class. There isn't room here to list all the problems connected with penalties, but we'll predict that much time will elapse before a satisfactory system (if any) is worked out.

• •

We recommend that airline officials read an editorial in the current Airline Ground Transportation Association Bulletin, calling for more cooperation between carriers and the limousine and bus operators. It's refreshing to see AGTA blaming itself as much as the airlines for the current lack of cooperation.

The editorial points out that 25 carriers were invited to the AGTA convention to discuss problems, policies and future planning. Two attended and only six even replied to the invitation. However, on the other side, it adds that "the AGTA member may look to himself for a good part of the blame. In the past, he has jealously guarded the right to operate his own business without outside interference regardless of the fact that frequently the interference was in his best interest. In some cases, the ground operator has displayed lack of vision . . ." AGTA wants to know the "official thinking of the airlines" on ground transportation and what they think the future holds. Sounds like a reasonable request. An exchange of views could be helpful.

• •

Odds and ends: United's New York-Chicago "men only" flight is said to be going over with a bang . . . Same goes for TWA's transcontinental coach out of Washington—an agent at the airport tells us that anytime the load gets below 75 (out of 81 seats) it's a bad night . . . An Alaskan airline president writes us that the weather's been so hot around Anchorage that "the bridges on the highways are all washing out due to melting snow, and this has helped air traffic considerably."

in south america

Braniff does
make the difference!

Mr. Perez (center) giving the highlights of Braniff's South America to Baron Manual De Teffe, secretary of Mexico's Brazilian Embassy (left), and Lee Gonzalez, Braniff's manager for Mexico (right).

Mr. Tony Perez has just told us so.
President of Tourismo Antonio Perez, he's also president of the Skal Club and, Mexican Association of Travel Agents; director of Mexico City's Chamber of Commerce, Variety Club, Tourist Association and Automobile Association. And he helped found the Junior Chamber of Commerce and the Mexico City Hotel Association. In short, Mr. Perez could pass muster in any civic or travel "who's who".

So he could be even more of a guiding light to his growing list of customers, Mr. Perez recently flew south with us—all the way round South America. Now he's joined the ranks. He's another travel agent who's putting out more flags where Braniff's concerned.
When we called on him in his Hotel Reforma offices, he was as enthusiastic as we could hope for.
In fact, from now on he'll be saying

it's BRANIFF

INTERNATIONAL AIRWAYS

Love Field • Dallas, Texas

U. S. Local Service Airline Traffic, April 1953

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor	Mail Ton Miles	Express Ton Miles	Freight Ton Miles	Total Ton Miles Rev. Traffic	Available Ton Miles Flown	% Available Ton Miles Used	Revenue Plane Miles	Scheduled Miles	% Scheduled Miles Completed
Allegheny	16,499	2,398,000	5,631,000	42.20	5,269	10,887	. . .	244,756	649,306	37.70	270,544	273,316	97.60
Bonanza	6,405	1,477,000	3,276,000	45.09	1,720	1,743	1,896	146,777	326,086	45.01	131,035	128,685	98.18
Braniff *	4,438	880,000	1,930,000	45.60	1,985	2,222	3,567	91,627	192,967	47.48	80,403	83,040	96.82
Central	4,427	637,000	3,231,000	19.72	3,163	1,135	2,252	67,244	369,283	18.21	153,863	154,293	98.95
Frontier	10,382	2,647,000	7,805,000	33.91	8,373	6,731	33,243	301,134	743,228	40.52	371,376	375,942	98.09
Lake Central	4,100	593,000	2,742,000	21.63	1,457	6,166	. . .	62,637	300,264	20.86	125,371	131,304	95.48
Mohawk	13,261	2,144,000	3,993,000	53.69	12,693	5,598	5,960	208,564	465,815	44.77	190,110	181,505	97.77
N. Central	16,454	2,654,000	7,087,000	37.45	8,291	12,307	. . .	272,606	810,101	33.65	337,542	355,455	94.65
Ozark	10,032	1,689,000	5,928,000	28.49	3,862	5,359	. . .	167,257	584,523	28.61	237,129	237,110	97.94
Piedmont	23,302	4,956,000	9,777,000	50.69	8,046	8,696	16,771	507,699	1,118,383	45.40	465,993	453,643	99.88
Pioneer	13,339	3,809,000	8,108,000	46.97	9,381	4,013	13,657	391,214	788,291	49.63	225,226	229,829	98.00
Southern	10,196	1,797,000	5,229,000	34.37	7,014	6,188	. . .	185,326	566,604	32.71	249,002	255,112	97.60
Southwest	15,400	2,996,000	5,332,000	56.19	7,048	3,463	9,518	305,515	617,263	49.50	247,538	244,650	99.30
Trans-Texas	7,484	1,590,000	4,807,000	33.07	5,769	2,983	7,589	167,752	549,406	30.53	228,919	231,120	98.65
West Coast	13,559	2,393,000	6,056,000	39.51	3,451	1,750	3,432	228,364	585,412	39.00	288,374	291,185	99.02
Wiggins	282	29,000	138,000	21.01	91	310	. . .	2,982	14,763	20.20	34,615	46,384	74.10
TOTALS	169,560	32,689,000	81,120,000	40.30	87,613	79,551	97,885	3,351,454	8,681,695	38.60	3,637,045	3,672,573	97.68
						Helicopter Services							
HAS	. . .	. . . .	. . . .	. . .	2,619	. . .	. . .	2,619	5,939	44.10	29,894	30,544	97.87
Los Angeles	. . .	. . . .	. . . .	. . .	4,738	. . .	. . .	4,738	12,436	38.10	29,261	31,392	93.21
N.Y.Airways	. . .	. . . .	. . . .	. . .	3,949	. . .	95	4,044	11,145	36.28	27,862	32,144	86.67

* Figures cover operations of local service route 106 operated by Braniff Airways as result of Braniff-NCA merger.

NOTE: Above figures include both scheduled and non-scheduled operations.

U. S. All-Cargo Airline Operations, First Quarter 1953

Airlines	TRAFFIC: Freight Ton-Miles	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Completed	REVENUES & EXPENSES: Total Operating Revenues	Freight Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income
				January, 1953									
Aerovias*	230,665	282,755	61.29	57,020	75,500	73.40							
Fly. Tiger	3,037,462	3,922,997	77.43	603,538	621,972	92.88							
Riddle	1,178,940	1,436,025	82.09	266,512	145,514	100.00							
Slick	4,891,266	5,490,483	89.09	834,103	854,629	62.32							
US Airlines	Figures not yet available.												
TOTALS	9,338,333	11,132,260	83.88	1,761,173	1,697,615	77.46							
				February, 1953									
Aerovias*	184,976	275,012	67.26	50,200	60,780	82.59							
Fly. Tiger	2,955,823	3,705,183	79.78	570,028	550,206	96.22							
Riddle	1,285,391	1,484,391	86.59	273,394	131,432	100.00							
Slick	3,783,622	4,790,825	78.98	716,268	831,016	69.21							
US Airlines	Figures not yet available.												
TOTALS	8,209,812	10,255,411	80.05	1,609,890	1,573,434	81.74							
				March, 1953									
Aerovias*	231,460	372,120	62.20	51,130	58,300	80.10							
Fly. Tiger	3,344,491	4,266,912	78.38	656,448	621,972	95.93							
Riddle	1,148,805	1,352,044	84.97	276,123	145,514	100.00							
Slick	4,829,941	5,788,782	83.44	809,372	907,117	61.60							
US Airlines	Figures not yet available.												
TOTALS	9,554,697	11,779,858	81.11	1,793,123	1,723,903	77.77							
						Quarter Ending March 31, 1953							
Aerovias*	647,101	929,887	69.59	158,400	194,580	80.24	$ 144,814	$ 141,875	$ . . .	$ 159,984	$ 106,623	$ 53,361	$ -15,170
Fly. Tiger	9,337,776	11,895,092	78.50	1,830,014	1,794,150	94.96	1,709,714	1,458,647	94,995	1,652,602	1,108,372	544,230	57,112
Riddle	3,613,136	4,272,460	84.57	816,029	422,460	100.00	593,553	482,414	73,647	561,528	382,094	179,434	32,025
Slick	13,504,829	16,070,090	84.04	2,359,743	2,592,762	64.27	2,431,505	1,701,165	483,688	2,441,338	1,444,920	996,418	-9,833
US Airlines	Figures not yet available.												
TOTALS	27,102,842	33,167,529	81.71	5,164,186	5,003,952	78.91	4,879,586	3,784,101	652,330	4,815,452	3,042,009	1,773,443	64,134

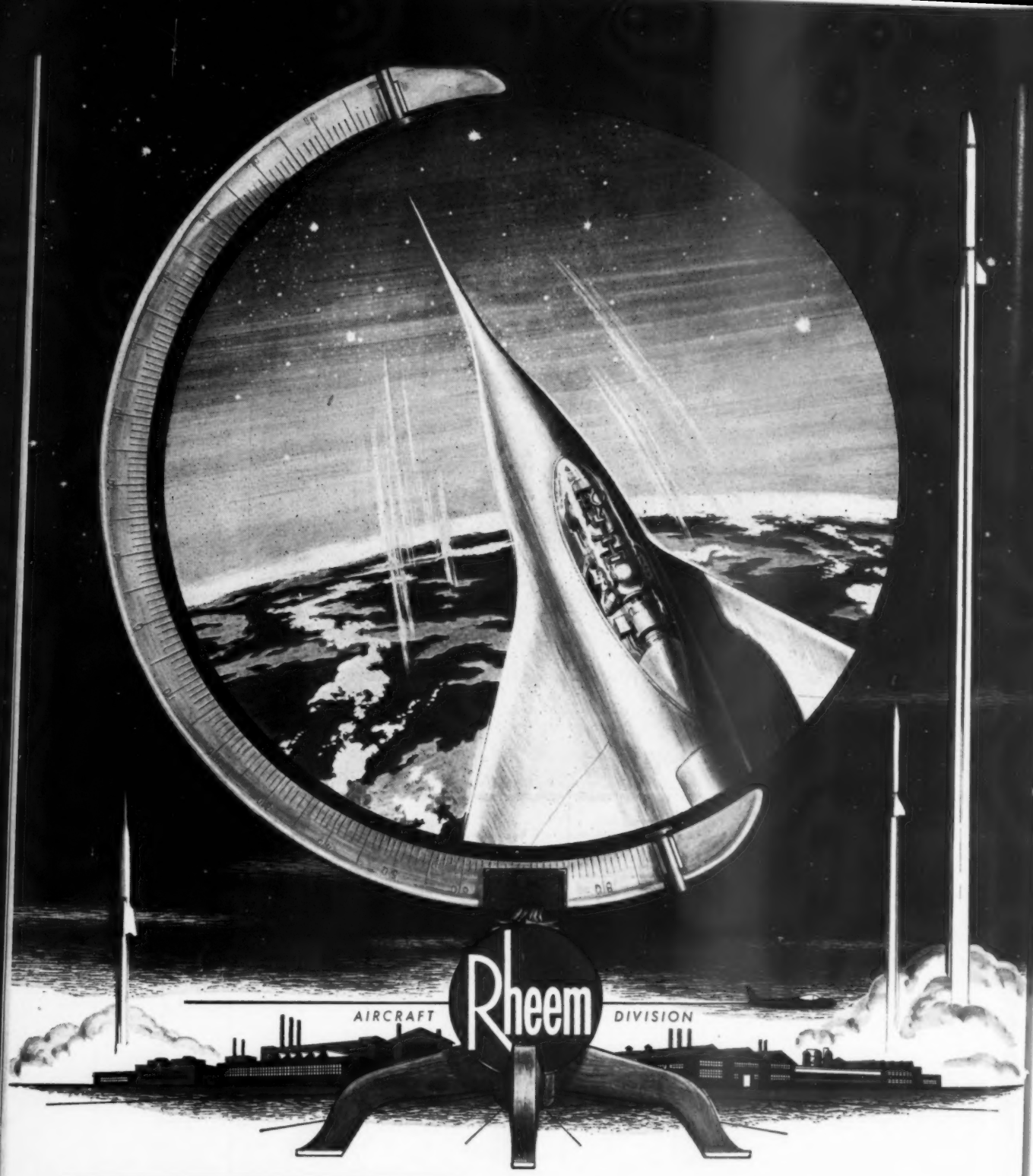
* Began operations December 4, 1952.

NOTE: Traffic figures are exclusive of defense contract operations. However, financial figures, i.e., total operating revenues and net operating income, reflect the net result of defense contract operations. This net figure is reported under Incidental Revenues, Account 4100, on CAB Form 41.

U.S. airline financial reports to the Civil Aeronautics Board are now summarized on a quarterly rather than a monthly basis.

This change was made necessary by the fact that the airlines are no longer required to follow a standardized reporting system for Form 41 financial data on a monthly basis, but file monthly company management reports which vary among carriers.

The standardized Form 41 financial schedules will continue to be filed quarterly with CAB and will be summarized on that basis.



American superiority in aviation is retained through aggressive research

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RHEEM Manufacturing Company • • • Aircraft Division, Downey, California

International Report

Germans Reported Ready To Buy Constellations

The German national airline, Lufthansa, is reported to have decided on Convair 340 and Lockheed 1049 Super Constellations for its short and long haul operations. Airline hopes to start operations shortly after ratification of the German Peace Treaty.

Although number of aircraft remains undisclosed, Convair has confirmed completion of negotiations with Commercial Air Equipment Corp., of Cologne, representing Lufthansa, and understanding is that terms call for a lease-sale arrangement. Deliveries are slated to begin in April, 1954.

Choice of Constellation over Douglas DC-6B has been announced by CAEC, with number of aircraft and terms also withheld. Original Lufthansa program was to purchase ten twin-engine and ten four-engine transports, but plan has since been scaled down to forestall opposition of other European countries, particularly France.

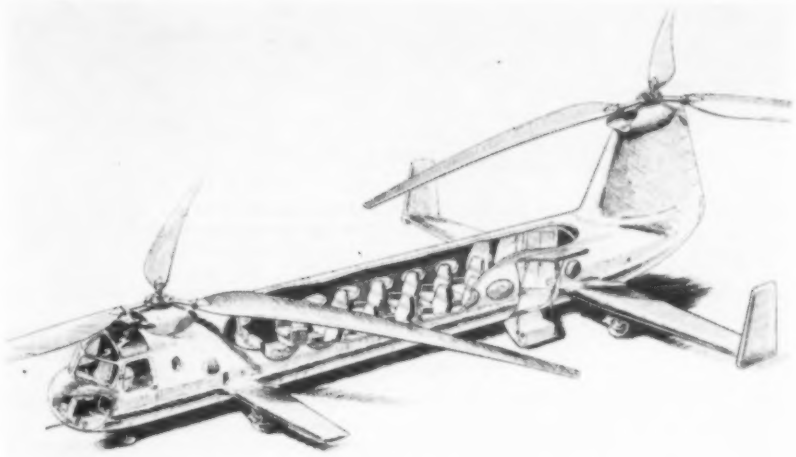
Britannia Fitted With New Proteus Engines

The Bristol Aeroplane Co. is fitting new engines into its Britannia prototype —four Proteus 705 engines to replace the four less powerful Proteus 620's. The prototype, with nearly 100 hours of flight testing to date, will be ready to fly with the new engines in a few weeks and will be featured at SBAC's Farnborough show in September.

The first production Britannia, scheduled to fly early next year, will be delivered to BOAC in October, 1954. Three more will be delivered to BOAC the following February. In addition to the 26 Britannias being built for the carrier, BOAC has five Britannia freighters (Mk. 200) on order.

Qantas Empire Airways is to get six Mk. 200's and there are orders for 10 more aircraft, but Bristol officials decline to identify the airlines.

Production plans for the Britannia have changed. The first 15 off the line will be the original Mk. 100 with Proteus 705, whereas the 16th and subsequent Britannias will have the stretched fuselage Mk. 300 (passenger version) with Proteus 705 engines giving 4,970 ehp instead of Proteus 705's 4,500 ehp. Production of the 705 will start at 10-12 engines monthly early next year and will have a relatively short run. These will be replaced by 705 production early in 1955.



ARTIST'S VIEW of Bristol's 173, Mark III helicopter.

Data on New Bristol 173 Disclosed

The Bristol 173 Mark III twin-rotor, twin-engine helicopter, scheduled to fly in mid-1954, will have a top speed of 153 mph and will carry 16 passengers or a freight payload of 3,000 pounds, according to data recently published by the Bristol Aeroplane Co. Ltd. Design calls for two sets of stub wings, a forward wing with a span of 21′ 3″, an aft wing with a span of 33′, and a four-wheel undercarriage.

Mark III helicopter will be powered by two Alvis Leonides Major engines rated as 850 bhp which will be installed at each end of the fuselage below the rotors and will rotate in opposite directions.

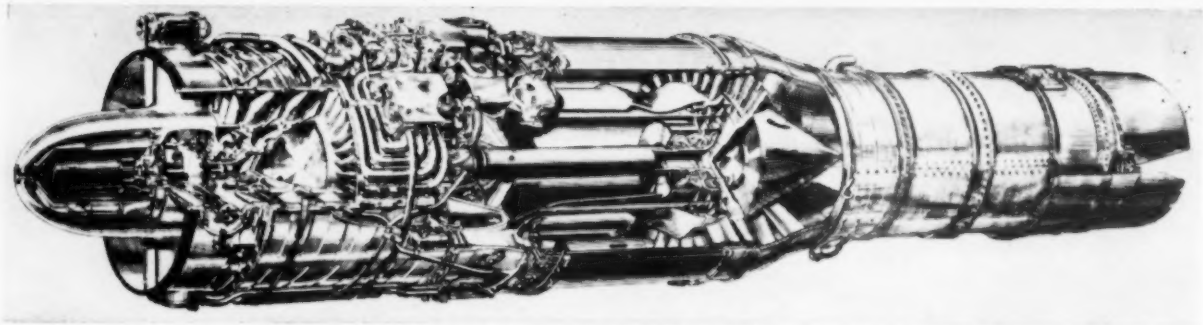
SPECIFICATIONS FOR BRISTOL 173, MARK III

Gross Weight (based on single engine climb)	13,500 lbs.
Gross Weight (maximum)	14,500 lbs.
Range—statute miles	214
Fuel Capacity—Imperial gallons	240
Oil Capacity—Imperial gallons	20
Top Speed	153 mph
Cruising speed	138 mph
Rate of climb (single engine)	120 fpm
Engines	(2) Alvis Leonides Major
Ratings—one hour power	850 bhp at 2900 rpm
maximum continuous	640 bhp at 2900 rpm
maximum weak mixture	530 bhp at 2750 rpm
Dimensions—Length (overall with blades folded)	55′ 2″
Width (overall with blades folded)	33′ 0″
Height (overall with blades folded)	17′ 0″
Rotor Diameter	48′ 6″
Cabin Length	28′ 10″
Cabin Width	5′ 2″
Cargo Space	660 cu. ft.

Prototype Gnat Underway in England

Prototype construction of the Folland Gnat lightweight jet fighter, said to weigh one-third that of conventional jet fighters but capable of production in one-fifth the time and at one-fourth the cost, is underway by Folland Aircraft Ltd., England.

The Gnat, a day fighter, will be capable of meeting any expected attack by enemy fighters or bombers, according to designer W. E. W. Petter, Folland managing director who also designed the English Electric Canberra. Petter describes the Gnat as a conventional swept-wing design with an all-flying tail, good fuel capacity, radio, armament, an ejector seat, and conventional landing gear.



FIRST DETAILED VIEW of the SNECMA Atar engine is given in this official drawing showing the physical arrangements of France's leading high powered jet engine. The Atar 101C, with afterburner, is rated at 9,000 pounds thrust while other models are rated from 7200 pounds thrust to 8800 pounds (101F), without afterburner.

INTERNATIONAL BRIEFS

MANUFACTURING

Fabrica Nacional de Aeronaves, Chilean national aircraft factory, is in operation with capitalization of $300,000. Plant, set up in air force maintenance shops at El Bosque Field, near Santiago, manufactures gliders and aircraft parts.

• •

SNECMA's version of the Rolls-Royce Tay turbojet engine, which it is building under license, will be **known as the Verdom.** SNECMA has also arranged to build the Rolls-Royce RA-7 and RA-16 Avons.

• •

Orenda-powered F-86's have been ordered from Canadair, Ltd. by the Royal Canadian Air Force providing the company, which recently lost a contract to build 227 Beech T-36A trainers for the USAF, with "several million dollars" in new business.

• •

Production of the **Pratt & Whitney J48** jet engine in France by Hispano-Suiza, possibly as an alternate powerplant for the Dassault Mystere, is an active possibility, according to European reports. Six J48's have been turned over to France under NATO arrangements and P&W and Hispano-Suiza now have an exchange of information agreement.

• •

First flight of the Boulton Paul P111A, British delta-wing experimental aircraft, powered by Rolls-Royce Nene turbojet engines, has been made. It will be used for aerodynamic research at or near the speed of sound.

• •

India has placed **an order for 71 Dassault Ouragan** jet fighters with France.

• •

Noorduyn Norseman Aircraft Ltd., now owned by a syndicate which includes R. B. C. Noorduyn, original designer of the **Norseman,** is erecting a building near Cartierville Airport, Canada.

• •

TRANSPORT

KLM Royal Dutch Airlines is reportedly contemplating placing an order for the de Havilland Comet III jet transport.

Reorganization of TAE (National Greek Airlines) is likely with the first step now underway in the form of a committee set up in Athens by order of the Communications Minister to study what is required to place the airline "on a more sound economical basis."

• •

Confirming earlier reports of **long-range helicopter plans** on the part of the Mexican government, that country's director of civil aviation, Guillermo Prieto, has been in Los Angeles studying operations of Los Angeles Airways.

• •

Scandinavian Airlines System is substituting Hamilton Standard for Curtiss Electric propellers on its fleet of Douglas DC-6's.

• •

A double-deck French Breguet 761 is being operated by Silver City Airways on a **three-month test basis.** If satisfied, British carrier will purchase three for London-Paris run.

• •

Forty-four-seat Comet 1A is being used by France's **Union Aeromaritime de Transport** for tourist-rate jet service.

• •

The French light bomber **Vautour,** powered by two Atar 101 C jet engines, is reported to have **flown faster than sound** in a test flight.

• •

First **production Comet II** isn't ready to fly and probably won't be until fall, **de Havilland** reports. Comet III prototype should fly next summer.

• •

British European Airways are using **Vickers Viscounts** on London-Copenhagen-Stockholm route.

• •

A **Japanese airline** still to be formed will be flying Tokyo to San Francisco by mid-December, according to a Tokyo report. Carrier is to be capitalized for $5,560,000 with government and private interests each putting up half.

• •

Trans-Canada Air Lines may enlarge Vickers Viscount order. Present contract is for 15 by 1955.

• •

With a wide range of U.S. gas turbines being cleared for export, American manufacturers plan **a big-scale campaign** to inform European operators that Britain is not the only turbine-producing nation.

as an aviation editor for a daily newspaper and as a public relations man for an aviation concern, I feel it altogether appropriate that such conventions be attended by those who spend so heavily and who work so hard to take the wraps off new developments upon which trade writers depend for source material.

The "camp followers" and "press agents" to whom you refer were highly pleased to be afforded an opportunity to make the meeting an enjoyable one and to hack successfully away at the usual maze of red tape to open the way to really good copy to which the writers were, we felt, entitled.

The host committee members especially welcomed a chance to give so many out-of-town scribes a first-hand look at a regional aviation center of which we are intensely proud and which few of our visitors previously had been able to inspect. We felt it money, time and effort quite well spent and are happy with the results.

I especially regretted your reference to the Amon Carter hat episode when there were so many other more typical events you might have mentioned. Two or three of Mr. Carter's hats got into the wrong hands, at least one of them by pure accident, but I'll bet my bottom copy pencil that this many, or more, would have been "lost" at any such meeting, regardless of its identity.

AL HARTING

Director of Public Relations
Southwest Airmotive Company
Dallas, Texas

•

FEDERAL RESPONSIBILITIES

To the Editor:

Your editorial "Upheaval in CAA" in AMERICAN AVIATION was a good one. Now that reorganization is under way, emphasis should be placed on the importance of the Federal Airport Aid Program and the necessity for accelerating this federal activity as a basic part of the reorganization program. By accelerating I do not mean more employes and red tape; I mean less—and a much greater appreciation on the part of the federal government of its financial responsibilities.

As a nation we cannot afford to be other than dominant in the air, and this requires a realistic national system of airports.

By virtue of the laws of our land, the responsibility for the construction of the airports rests with the local units of government and the states; however, they cannot be expected to construct airports to national standards unless the federal government pays its share of the cost, which is something it definitely has not been doing.

At the Annual Wisconsin Aeronautics Conference the slowing down of the Federal Airport Aid Program came in for a great deal of criticism from all levels of government and industry. Walter Betsworth made a speech on the subject that was enlightening.

T. K. JORDAN

Director
Wisconsin State Aeronautics Commission
Madison 2, Wisconsin

"YARDSTICKS," AS THE CAB SEES THEM

To the Editor:

The June 8, 1953, issue of AMERICAN AVIATION carries an article entitled "Wrong Yardstick Distorts Profit Figures," which, in the opinion of the Board, seriously confuses the question of rate of return in the airline industry.

Before going into a detailed discussion of some of the points in your article, it appears desirable to set forth the earnings of the domestic trunklines since the Civil Aeronautics Act was enacted. The table below shows the return on investment for domestic operations for the domestic trunkline industry. These returns are based on reported figures and are calculated on the same basis the Board has used in determining rates of return heretofore, except that no screening of the reported data has been made to eliminate items which may not be allowable for rate purposes.

Rate of Return on Domestic Operations-All Trunkline Carriers, 1939-1952

Year	Ret. on Invest.[1]	Year	Ret. on Invest.[1]
1939[2]	2.3%	1945	9.4
1940[2]	13.2	1946	(loss)
1941[2]	4.5	1947	(loss)
July-Dec. 1941	14.1	1948	(loss)
1942	20.3	1949	5.9
1943	17.1	1950	12.4
1944	17.5	1951	14.9
		1952	14.3
		Average	8.3

[1] Ratio of reported net profit (before interest expense and as adjusted for retroactive mail payments) to domestic portion of reported system investment. System investment is average of beginning and ending investment and is assigned to domestic operations on basis of relative operating expenses. The investment figure used for each carrier is the sum of the reported net worth and long-term debt.

[2] Fiscal year ended June 30.

The following points in the article appear to require specific comment.

1. It is inferred that the Board employs two rate of return yardsticks, one for mail rate cases and the other for Bureau of Air Operations studies.

2. It is then inferred that one method, stated to be the Bureau's, distorts the true earnings of the airlines and if applied would produce a rate of return of 10.2 percent in 1952, as contrasted to 5.2 percent produced by another method.

3. It infers that the use of earnings before interest charges to measure return on total investment is incorrect.

These are the facts:

1. Since its inception, the Board and its staff have measured the investment base by the amount prudently invested in assets used and useful in the public service. This is basically the method used by most public utility regulatory agencies.

2. Assuming no attempt is made to eliminate assets not used or useful, the investment base can be derived from a balance sheet by two methods which produce mathematically identical results. *(A balance sheet example of this point has been deleted from this letter for the sake of brevity.)*

It should be recognized, of course, that the investment figure thus derived from a consideration of either side of the balance sheet reported by the carrier is not necessarily the investment recognized for rate purposes. For example, investment attributable to property not used or useful in the certificated operation would ordinarily be eliminated.

When it is desired to make such adjustments, it is clearly necessary to start from the left-hand side of the balance sheet, which supplies the detailed breakdown of the assets. However, where no disallowances are made, as was true in the case of the Appendix to the Board's opinion dismissing the General Fare Investigation, it is more convenient to use the sum of the long-term debt and net worth.

3. With respect to the use of earnings before interest charges as a measure of the rate of return, it is apparent that if the return is being considered on the basis of total investment rather than on net worth alone, it is essential that interest charges be treated as a division of profits rather than as an expense, since otherwise interest would be included twice, once as an expense and the second time in the measure of return. This would be the same as deducting dividends on preferred stock from the profits used in calculating the return on investment. It would be proper to treat both interest and dividends on preferred stock as expenses if one were interested in the earnings on common stock equity, but not when considering the returns on total investment.

HARMAR D. DENNY

Acting Chairman
Civil Aeronautics Board
Washington, D. C.

(The last sentence of CAB Member Denny's second paragraph is, of course, a paradox. The CAB, we feel, can hardly use the same system all at once.

In commenting on the Board's use of two rate of return yardsticks, reader Denny's letter contains some amazing inconsistencies for an official CAB response on such an important matter. He points to the Board's historic practice of measuring, "the investment base by the amount prudently invested in assets used and useful in the public service," and making the academic (not factual) assumption that "no attempt is made to eliminate assets not used or useful." Reversing his field, Denny later acknowledges that for rate making purposes "investment attributable to property not used or useful in the certificated operation would ordinarily be eliminated, as would amounts improvidently expended," and further acknowledged, "when it is desired to make such adjustments, it is clearly necessary to start from the left-hand side of the balance sheet."

A better substantiation of the Board's two rate of return yardsticks than that found in CAB member Denny's letter is not possible.

As stated in our June 8th article, industry observers have been wondering whether the CAB contemplates using an investment base of long-term debt and net worth (the right-hand side of the balance sheet) to determine rate of return in mail rate cases. CAB member Denny now makes it clear that these wonderings were unnecessary, by stating the clear need in rate cases to start from the left-hand side (assets) of the balance sheet.

So far as the General Fare Investigation is concerned, it is commonly understood that the use of an investment base with no adjustments was for the sake of expediency. We are at a loss to understand why Mr. Denny cited the Board's departure from its historical practice of making adjustments to the left side of the balance sheet. Denny failed to explain why the Board sees fit ever to measure rate of return on net worth and long term debt.—Ed.)

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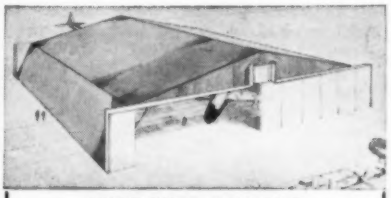

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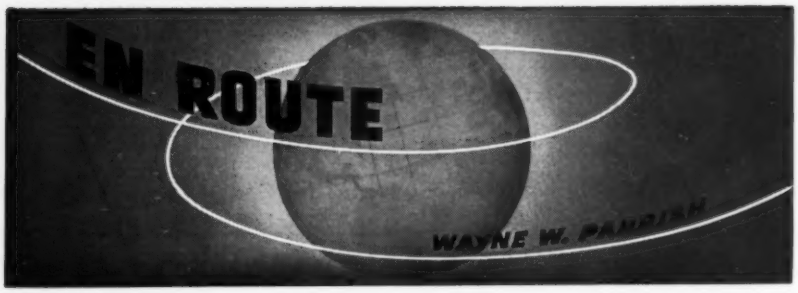


Blue Dial

I'm finally off to the big air show in Paris, up to Stockholm, and a few other places, but in the meantime here are some more odds and ends of my wanderings.

I'm wearing a watch which has only one counterpart in the world, so far as I know. It has a royal blue enamel dial. How I got it has quite a history.

Back in the fall of 1945 after the war I went to Switzerland with a group which included Bill Arthur, now of Delta-C&S, then a Colonel with the Air Transport Command. In Geneva we went watch-buying and I ended up up with a rose-gold Patek-Philippe, one of the finest watches in the world.

I Want One

Several years later while wandering around Paris I passed the Patek-Philippe shop on the Place Vendome and saw in the window a rose-gold watch with a blue dial. I thought it was the prettiest watch I'd ever seen. So I made up my mind to have Patek remodel my watch with a similar blue dial.

Next time I was in Geneva I went to the Main Patek offices and said I wanted a blue dial put on my watch. They insisted they had never made such a watch. I insisted I had seen one in the Paris shop. They disavowed all knowledge, and it wasn't until some time later that I learned that the Paris watch had been remodeled there in the branch shop for a special exhibition and there wasn't another one like it.

After much discussion Patek decided they'd try to put a blue dial on mine, just to keep me happy. I left the watch there and some months later, thanks to the TWA office in Geneva, I received it. I was sorely disappointed. The dial was a very dark-blue steel, a thousand miles from what I had wanted. But there was nothing to do but wear it. Within a year the dial began to oxidize, so when I went to Geneva last fall I hied myself back to Patek and said how come.

Second Effort

The Patek people admitted they had done a horrible job. I kept saying, why can't I have a royal blue enamel put on. So after more conferences they agreed to try. Said it would take a long time and they couldn't estimate the cost. I said get moving. I'd wait.

Some four months later and three years after the first effort, and for a cost of only $20 which included cleaning and a part replacement, I received my watch, through the usual good help of TWA friends. It's a beauty. Maybe it will set a trend. I don't see why a little color doesn't help something you wear every day and look at constantly. Even Patek ought to be pleased.

Cosies for Eggs

When my wife travels abroad with me she always sneaks out to department stores to see what new things she can find. There's nothing like Paris stores for new gadgets but the truth is that Copenhagen has turned out to be most fruitful through the years.

Do you like to eat soft-boiled eggs directly from the shell? It's very popular in Scandinavia, so the Danes dreamed up little padded cosies to put over the eggs to keep them warm. She bought a few as gifts and kept several for our house and we use them all the time. They're pint-sized versions of the cosies which the English use to keep teapots warm. And now in New York I've found a nice chromium egg-cutter which fits nicely over the end of an egg and cuts off the top very neatly, thus avoiding the mess I usually make trying to hack off the top with a knife.

Another item my wife found in Copenhagen was a tiny funnel for use in transferring perfumes or other liquids from one small bottle to another. Years of searching in the U. S. never produced a funnel small enough to fit the small necks of tiny bottles. But the Danes have 'em on sale in a department store. It's surprising what new things you can find by careful shopping abroad.

Russian Movies

Ever see a Russian movie? I went to one in New York the other day at the tattered old Stanley Theatre on Seventh Avenue just south of 42nd Street. The Stanley has been showing Russian movies for many years but the quality and quantity of output has been very poor since before World War II. But this new production by Artkino is Russia's first full-color film and I must say the color and the settings were quite excellent.

The film is called "Sadko," based on the opera by Rimsky-Korsakov. It was strictly fantasy, quite unlike what you'd expect from the U.S.S.R. There was a little propaganda, but not much. Sound effects were quite good. Several female stars were awfully good looking. But the film fell down on the acting and it got a little boring. The audience was a motley collection of odds and ends, mostly pro-Soviet, I'd say, and a far cry from typical American audiences. But even the sympathetic audience couldn't help bursting out in laughter at one ludicrous bit of acting

Two Good Shorts

There were two shorts in color which were very good. One showed the famous botanical gardens on the Crimea which were begun back in the days of the Czars. The other was on the Moscow zoo. Technically they were as good as anything Hollywood puts out.

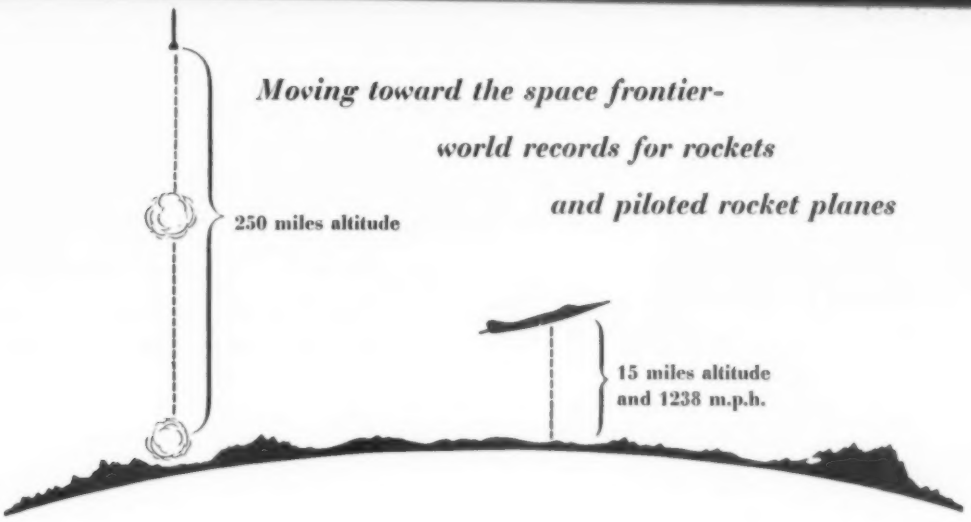
On the mezzanine of the Stanley are books and records for sale, all Soviet Union propaganda, of course. There are magazines from Rumania and Bulgaria, and other satellites, but

the shop is pretty crummy and hardly an impressive showpiece for foreign propaganda. I'm not recommending that you start patronizing the Russian arts, but if you want to see a U.S.S.R. showcase in Times Square in New York, there it is.

My Ego Expands

My ego being of considerable dimensions, I expand rapidly when I get flattering comments. A few weeks ago Charles Collins wrote in the **Boston Herald** that a piece I had written on the loudspeaker nuisance at airports had brought results at Logan International in his home town. The management had been hard at work streamlining announcements and eliminating some. So Charlie referred to me as being "in more ways than one, this country's Mr. Aviation." Charlie must have had about three on the house when he wrote it, but it sure does hit one's vanity.

And good old Joe McLaughlin, who seems to be remaining as director of aeronautics for Illinois even though he's a Democrat (forgive the naughty word) dreamed up a take-off on the British slogan when he dropped me a line saying "the sun never sets on Parrish." Sometimes I wish I really did travel that much but on the other hand, I'd miss a lot of night spots if I did. Thanks anyway, Joe.



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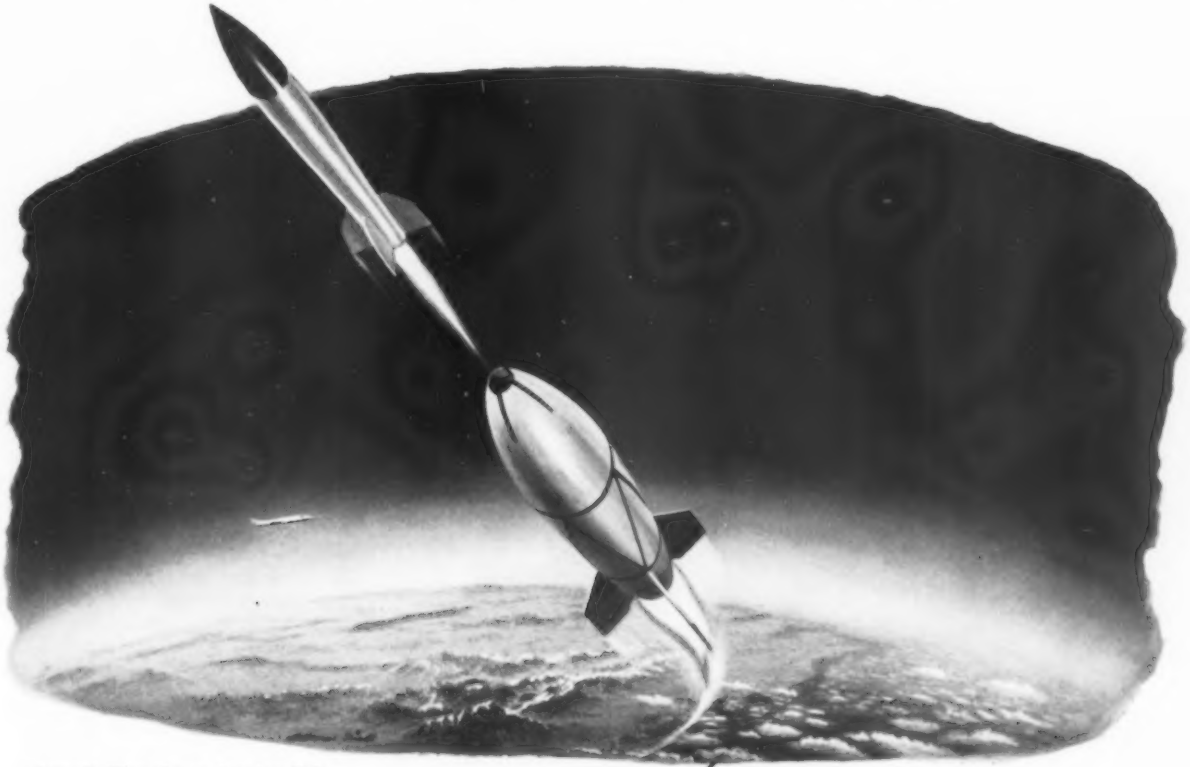
and piloted rocket planes

—the Douglas Skyrocket and Wac-Corporal

How soon will man cross the Space Frontier? Already, Douglas-built planes, rockets, and missiles—including the Wac-Corporal and D-558-2 Skyrocket—have probed at its fringes.

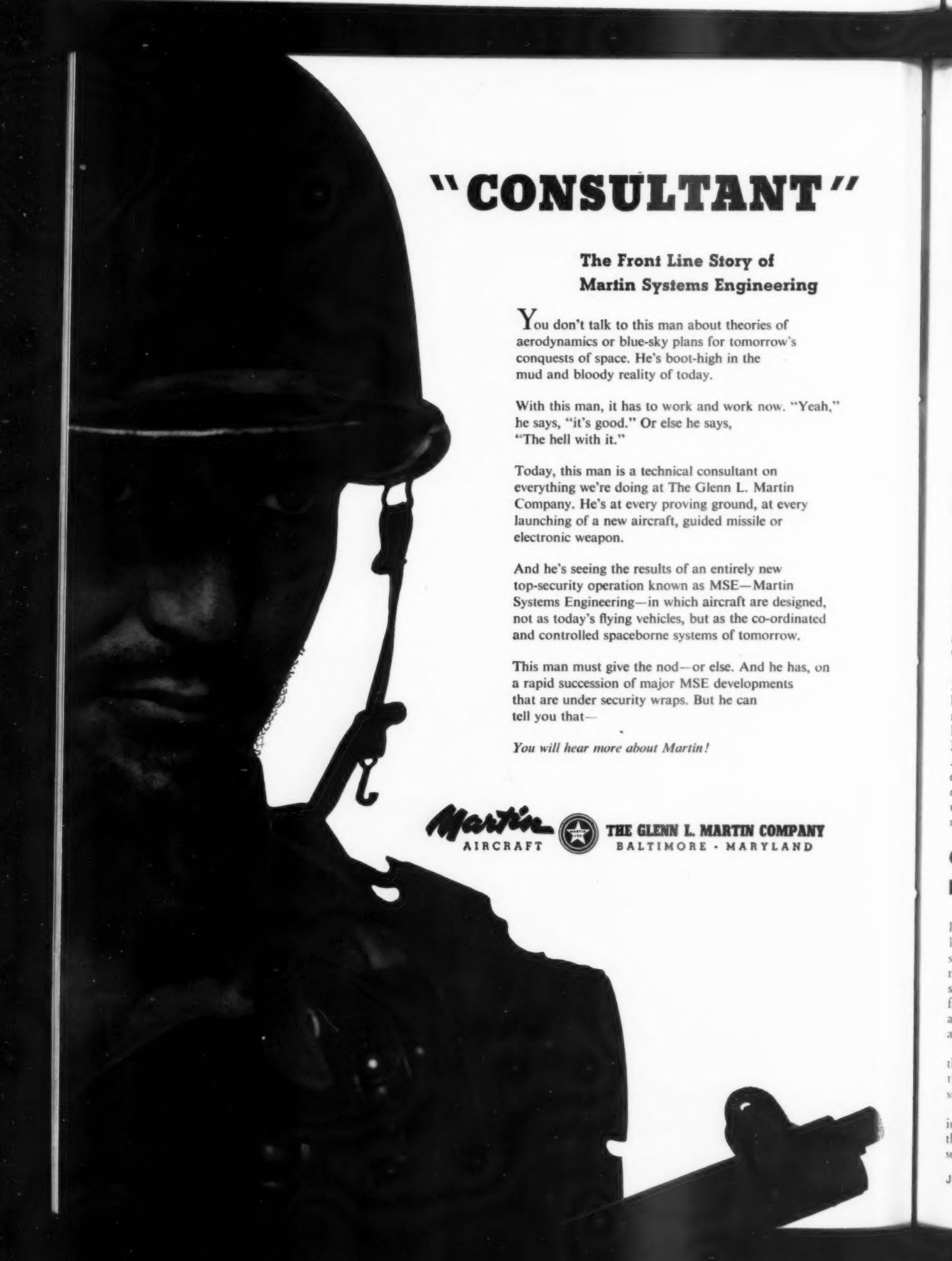
In a record climb, the Douglas D-558-2 reached an altitude where its pilot was *weightless*, as in a flight through space, while the Wac rocket, set in the nose of the V-2, travelled one-quarter of the way to the proposed orbit of a man-made satellite. Most important, both records came during *normal research*—planned to keep the United States and its Armed Forces out in front in the fields of guided missiles and supersonic aircraft.

Performance of Skyrocket and Wac-Corporal is proof of Douglas leadership in all phases of flight. *Farther and faster with a bigger payload* is the basic rule of Douglas design.



Army's Wac shown leaving V-2

Depend on *DOUGLAS* **First in Aviation**



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News at Deadline

Experimental 'Copter Program Killed

The experimental program on the Bell XH-15 liaison helicopter has been terminated by the USAF. The three aircraft completed did not meet expectations, with the primary difficulties centering around the adaptation of experimental engines (the Continental XO-470 and Franklin XO-425) to an experimental helicopter configuration.

The program, which began in 1946, was 90% completed. The three helicopters will probably be used as flying test stands for rotor systems.

Decision on C-123B's Due in Month: Talbott

A decision on whether the Air Force will go ahead with production of the Chase C123B is due in about one month, according to Air Secretary Talbott. The Army would like an assault transport, Assistant Air Secretary Roger Lewis has declared, but Lewis has added: "It's a question of whether the C-123 fills the bill."

If production goes ahead the Kaiser Motors Corp. will be given a chance to bid on the work, Talbott announced in response to close questioning by Sen. Homer Ferguson (R., Mich.) and Emil Mazey, secretary-treasurer of the United Auto Workers-CIO. Talbott added, however, that he believes that the overhead on the Willow Run facility makes it unlikely that Kaiser would be able to meet a competitive price.

Opposition Kills Jet Prototype Bill

The jet transport prototype bill, H. R. 1926, has been consigned to the legislative ashcan by Rep. Carl Hinshaw (R., Calif.), who introduced the measure. Government and airline representatives unanimously opposed it before his House Commerce subcommittee, and no representatives of manufacturers appeared.

The CAB, which at first supported the bill, also reversed its stand, noting that there had been "a change in the situation."

Considerable support was forthcoming, however, for a bill providing for the development of a prototype local service transport.

$65,000 Limit for Presidents' Salaries?

Airline presidents earning over $65,000 annually may find that part of their salaries no longer underwritten with mail pay, if the CAB adopts the position taken by its air operations bureau in the Trans-Atlantic Mail Rate Case.

The figure, based on the average salary of presidents of the Big Four, would not set a limit on the amount which the airlines could pay, but would limit the portion underwritten by the Government. In previous cases the CAB has recognized $12,000 as tops for local service airlines, $15,000 for intra-Alaska carriers, and $18,000 for U. S.—Alaska operators.

Specifically under discussion are the salaries of Warren Lee Pierson, TWA board chairman, (average during last three years: $75,118 in "direct" compensation) and Ralph S. Damon, TWA president, (average: $93,192). Remarked the bureau: "Bureau Counsel do not believe that TWA's operations are so much more complex than those of American Airlines . . . to justify . . . the substantially higher salaries paid by TWA."

NATCC Opposes Use of Idlewild by Comet

National Air Transport Coordinating Committee, in a move to avoid further complication of an already critical airport situation in the New York metropolitan area, has requested that the Royal Canadian Air Force either withdraw its request for "intermittent" jet Comet operations into New York's Idlewild Airport, or be willing to accept "suitable alternate" landing areas in the vicinity.

The NATCC action was in the form of letter, dated July 2, 1953, to the U. S. Ambassador at Ottawa requesting that the RCAF be made acquainted with the New York airport situation, and came after indication to the Port of New York Authority from RCAF of its desire to fly into Idlewild "on an intermittent basis."

Although no information could be ascertained on RCAF reaction to the NATCC request, recent surprise visit of a Comet to Washington, D. C., indicates that the "suitable alternate" proposal is being accepted. After flying non-stop Ottawa-Washington on this flight, on the return trip the Comet landed at Mitchell AFB, 25 miles east of New York.

Meanwhile, the Comet's first visit to the United States has been the subject of adverse comment in the London *Daily Express* which said: "The jetliner (was) hidden away as if it was something to be ashamed of . . . It's a sad, sad day when a chance like this is fumbled and foozled into a near-fiasco." The newspaper blamed the lack of publicity and "semi-secrecy" on the RCAF which decreed that the Comet was a military machine on a routine military flight. Publicity was neither sought nor desired by the RCAF, the staunchly pro-Comet, *Daily Express* added.

TWA Atlantic Flights Affected by Strike

A walkout of TWA navigators that began on July 10 has resulted in cancelled trans-Atlantic flights. The unexpected move by Local 520 of the CIO-Transport Workers Union followed the elimination of navigators in TWA flights between Paris and Rome.

The airline termed the strike "strictly illegal," asserting that it had a contract running until the middle of 1954. The union claimed that the carrier had violated the contract by eliminating the jobs.

As this issue went to press 38 navigators had been fired as a result of the strike, and 24 out of 32 trans-Atlantic flights had been canceled during the first three days.

Aluminum Price Hike To Increase Costs

Aluminum prices will probably go up again this week, bringing with them higher prices on both military and civil aircraft. Aluminum Company of America has signed new contracts with three labor unions and the pay boosts "must necessarily result" in advances in prices, Alcoa said. The wage hikes will mean a $10 million annual salary increase for Alcoa's 55,000 workers.

Loss of Tail Reported In Navy Connie Crash

In-flight loss of the complete empennage and a short section of the fuselage was apparently the probable

cause of a recent crash of a Navy B7V-1, Lockheed Super Constellation, which occurred near Chestertown, Md., the airplane was one of first Wright Turbo-Compound-powered Constellations, and was operating on a pilot training mission out of Patuxent Naval Air Station when the accident occurred.

Although official Navy findings are not expected for some time, report is that empennage separation occurred during a violent training maneuver, and that structural failure originated at fuselage access door for an auxiliary power unit carried aboard Navy Constellations. The report also indicates that the access door was installed as a "post delivery" modification, and was made after the R7V-1 had passed static tests and flight structural demonstrations.

An Air Force pilot flying in the vicinity allegedly claims that the Constellation was doing 70° banks, swaying from one side to the other, then went into a dive, whereupon the tail separated from the rest of the plane.

500 MPH Passenger Jets By 1960: Heinemann

Passenger jet aircraft will be flying at 500 miles an hour by 1960 and 600 mph a decade later, according to E. H. Heinemann, chief engineer of the Douglas Aircraft Co. In a talk before the San Francisco-Oakland Chambers of Commerce, he added supersonic transports can be built to fly at 1,000 mph at 35,000 feet, but indicated intense heat resulting from friction of the air may limit them from going beyond that.

Heinemann made no prediction as to when jet airliners will be flying in the U. S., saying only that such planes would be used when they are economically justified. "In Europe they are doing an excellent job of pioneering in the jet field," he declared, "but cannot now compete economically with American propeller-driven transports."

Kaiser, Stroukoff Bid for Chase

Discussions revolving around the possible sale of Chase Aircraft Co. have been frequent in the past few months, with both Edgar F. Kaiser, board chairman, and Michael Stroukoff, vice president, as potential buyers, but no important negotiations have taken place since the cancelling of the USAF order for C-123B's, according to Clay Bedford, Chase president.

A little over two years ago the Henry J. Kaiser Co. paid $2.45 million for a 49% interest in Chase, according to Bedford, in anticipation of large production contracts for the C-123.

Canadair Weighs New Project Hopes

Recent cancellation of a $100 million H. S. Air Force contract has left Canadair, Ltd., with the problem of how to maintain production and its work force after it comes to the end of its current T-36 and F-86 orders. Possible answers now under consideration: a Canadair-designed submarine hunter to replace the obsolete Lancaster; a Turbo-Compound version of the Bristol Britannia; and the Convair XF-102 (Convair's board chairman, John Jay Hopkins, is also chairman of the General Dynamics Corp., of which Canadair is a subsidiary).

No decisions are likely according to an analysis in the Toronto *Financial Post*, before the Canadian elections, which will be held on August 10. The government has financed a large portion of the Canadian aircraft industry and has an interest in keeping the work force together. A stretchout in defense production, designed to keep the work force relatively stable, is expected.

CAB Would 'Tailor' Rate of Return

The rate of return on investment for airlines should be "tailored" to fit each carrier, in the opinion of the CAB's air operations bureau, as set forth in the Trans-Atlantic Mail Rate Case. A uniform rate of return would be less appropriate than a rate that would result from applying different percentages to debt and equity financing.

The new system would, the bureau declares, result in "a higher overall return to a carrier with a high proportion of equity in its capital structure, and a lower overall return to a carrier with a high debt capitalization."

In the trans-Atlantic case Pan American would get an overall rate of return of 9.13%, based on a rate on debt capital of 3.1% and a rate on equity capital of 11.78%. TWA's overall rate of return would be 8.03%, based on a rate on debt capital of 3.56% and a rate on equity capital of 11.78%.

SE 210 Reverse Thrust

Design and construction of France's twin-jet medium transport, the SE 210 Caravelle, will be undertaken by the nationalized aircraft firm of SNCASE alone, as a result of SNCASO's order for SO 4050 Vautours. The Caravelle will have a Comet nose section, and SNCASE expects the plane's Rolls-Royce Avon RA 16's to have reverse thrust. Maximum gross will be 88,200 pounds.

AF Asks $200 Million

The Air Force has asked the Senate to restore $200 million that was lopped off its budget in the House. The request, made by Air Secretary Harold Talbott and USAF Chief of Staff Nathan Twining, would restore most of a $240 million cut which was written into the House-passed defense money bill H. R. 5969. The Administration had requested $11.29 billion for the Air Force.

CAB Reverses Stand On EAL/BNF/TWA Interchange

CAB Examiner William J. Madden has recommended disapproval of a second transcontinental interchange service proposed by Eastern, Braniff, and TWA. The service would compete with an existing interchange offered by National, Delta, and American.

Madden's report was in the controversial Reopened Southern Service to the West Case, in which the original NAL-Delta-American service was authorized. In a July, 1951 opinion, however, CAB "invited" Eastern, Baniff, and TWA to set up a similar operation.

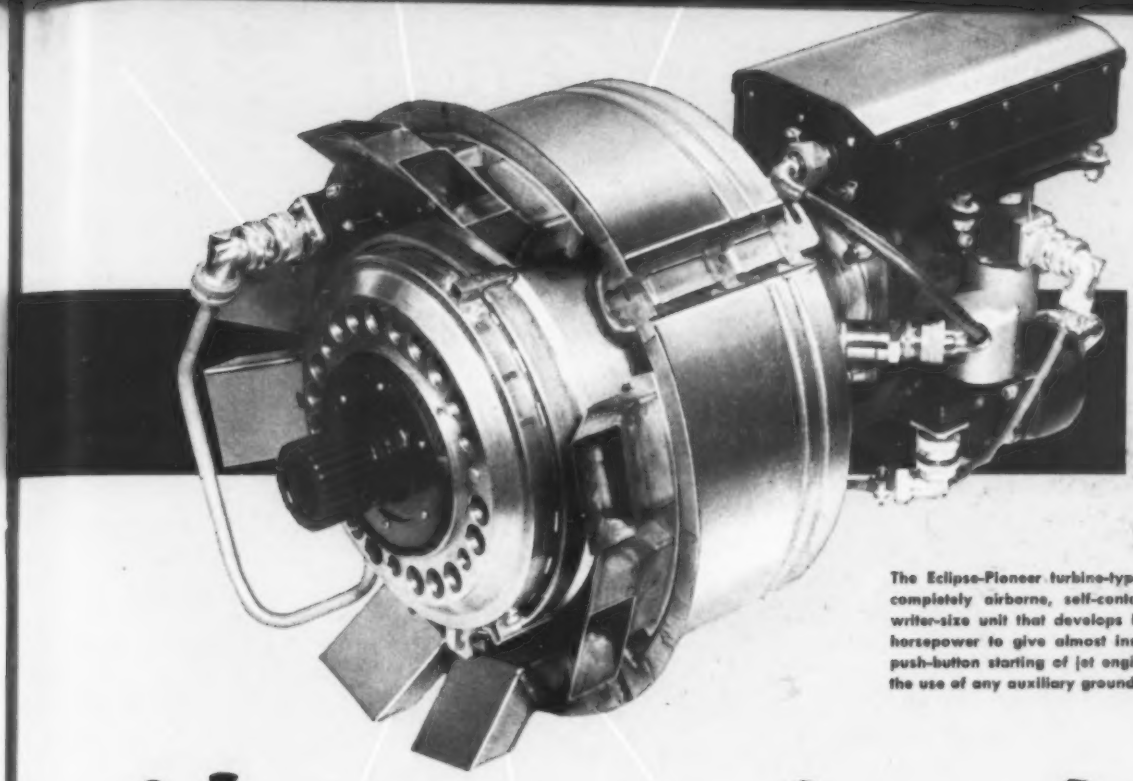
Following Spring, CAB authorized the new service but, on April 14, 1952, as a pre-inaugural flight was in the air, National secured a court order staying the CAB authorization and blocking the intended inaugural. Thereafter, CAB reopened the case for further hearings.

Of the proposed interchange, Madden said "the most that can be said is that it may contain no serious harm." But a certificate change which would permit Eastern to fly trans-Gulf operations for through interchange services with Braniff and TWA poses "a formidable hurdle," Madden claimed.

To meet the needs of the Florida-Texas area, however, he favored a National-Eastern interchange at New Orleans, but suggested CAB not compel the service pending possible voluntary agreement among the parties.

Group Studies Aid

A 12-man industry group which is studying the Federal-aid-to-airports program for the Commerce Department is trying to determine what volume of military operations are expected by the Defense Department at civil airports. Reports are also being heard on the history of Federal aid, current status of the program, and the future responsibility of the Federal government. The group hopes to have final recommendations ready for the Department's Transportation Council in September.



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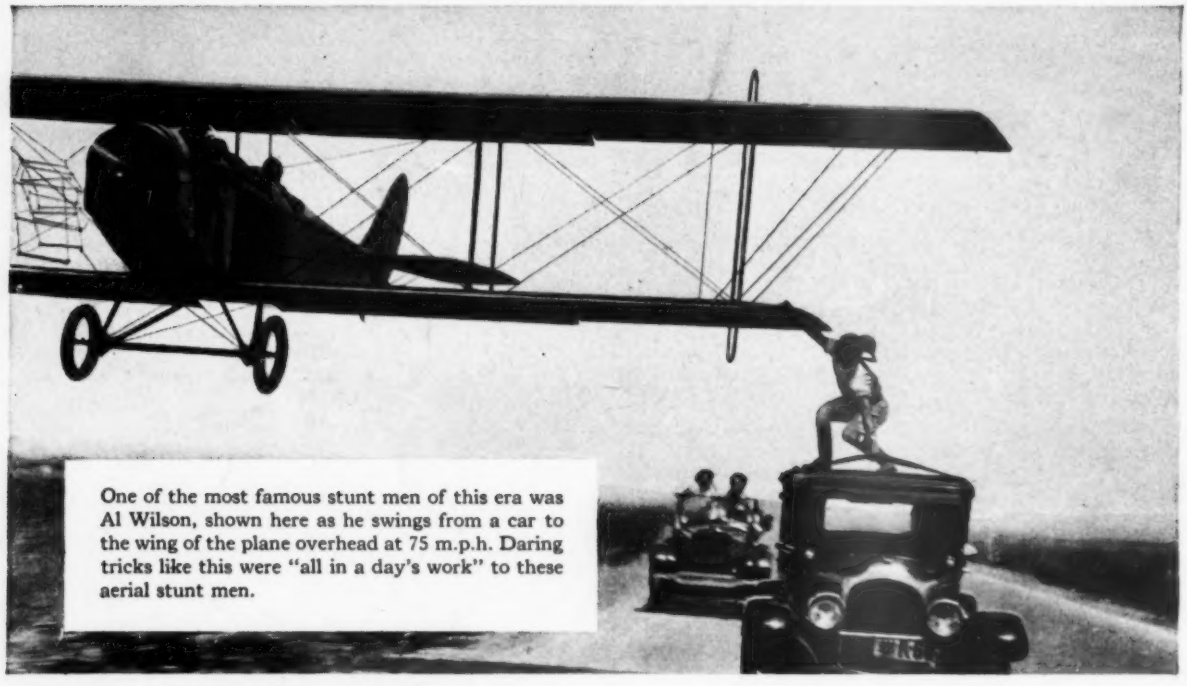
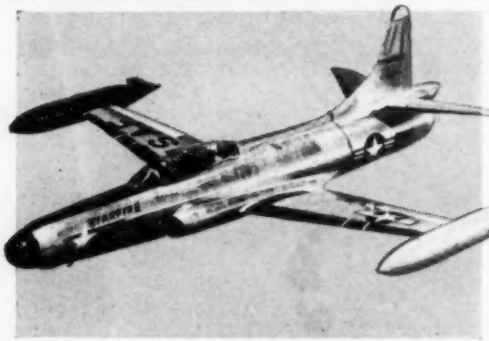
Aerial Daredevils of the Twenties

Many of the aviators returning home from World War I "bitten" by the flying bug, sought to capture the public's imagination and greater support for aviation by barnstorming exhibitions at fairs, and other community gatherings, throughout the country. They toured and stunted with planes salvaged from the war, gave flying lessons and took passengers on short flights.



One of the most famous stunt men of this era was Al Wilson, shown here as he swings from a car to the wing of the plane overhead at 75 m.p.h. Daring tricks like this were "all in a day's work" to these aerial stunt men.



TODAY aviation is so much a part of our environment it needs no such spectacular daredevil tactics to prove itself. Symbolic of the great strides made in the field of aeronautics is the U. S. Navy's F-94C Starfire built by Lockheed. Capable of speeds over 600 m.p.h. the Starfire houses 24 rockets in a ring around its nose and features radar-spotting and automatic firing mechanisms.

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